P-W

D-9 Whitlock Oil Co. State #1
NE/4-NE/4 Sec 36-Twp 10S-R28E
Graham. County No Permit

County Graham

Area

Lease No.

Well
Name Whitlock State # 1

Location SE NE Sec 36 Twp 10S Range 28E Footage 490' FWL & 1420' FNL

Elev ____ Gr ____ KB ____ Spud Date ____ Completed Abandon 1927 Approx. Total Depth 1925 ?

Contractor: ____ Approx. Cost $ ____

Drilled by Rotary ___
Cable Tool ___

Casing Size	Depth	Cement
10" 2	876	with shoe
8¼	1328	" "
8¼	1405	cemented
6 5/8	to bottom w/shoe	

Production Horizon ____

Initial Production D&A

REMARKS Fresh artesian water at 1080'

Javelin Peak 7.5' Quad

Elec. Logs ____
Applic to Plug ___ Plugging Record ___ Completion Report ___

Sample Log ____
Sample Descrip. X
Sample Set ____
Cores ____

Water well - accepted by ____

Bond Co. & No. ____

Bond Am't $ ____ Cancelled ____ Date Organization Report ____

Filing Receipt ____ Dated ____ Well Book ___ Plat Book ___

Loc. Plat ___ Dedication ____

5-9

02-009-05015

PERMIT NUMBER none Date Issued ____

5-9

Whitlock Oil Co. State #1
State #1, SE¼ NE¼ 36-10S-28E, Log from ABM files
Graham County, Arizona

0	-	40	Sand
40	-	120	sand and shale
120	-	135	sand shale and water
135	-	155	brown and blue shale
155	-	165	blue shale
165	-	180	sand and water (hole full)
180	-	205	brown and blue shale
205	-	215	water sand (hole full)
215	-	230	brown and blue shale
230	-	240	water sand (hole full)
240	-	416	gray shale
416	-	640	brown and light shale
640	-	650	sandy shale (salt water)
650	-	740	brown shale
740	-	1015	blue shale
1015	-	1022	water sand (salt water)
1022	-	1045	brown shale
1045	-	1078	brown sandy shale
1078	-	1094	slight sandy shale
1094	-	1096	shells gypsum (selenite)
1096	-	1104	brown shale
1104	-	1115	light gypsum shale
1115	-	1125	sand (water)
1125	-	1165	brown shale
1165	-	1185	sand (water)
1185	-	1197	brown shale
1197	-	1208	Water sand (salt water)
1208	-	1212	blue shale
1212	-	1260	sand and gravel (salt water)
1260	-	1274	brown and green shale
1274	-	1284	water sand (salt water)
1284	-	1323	brown sandy shale
1323	-	1328	red clay (hot)
1328	-	1350	brown sandy shale
1350	-	1352	water sand (salt water)
1352	-	1363	brown shale
1363	-	1364	coarse water gravel (fresh artesian water at 1080')
1364	-	1369	fine sand (fresh art. water at 1080')
1369	-	1405	coarse water sand
1405	-	1411	conglomerate
1411	-	1422	fine sand
1422	-	1477	sand and gravel
1477	-	1614	red sandstone
1614	-	1627	hard shells
1627	-	1647	brown sandstone
1647	-	1657	hard sand
1657	-	1675	hard sand
1675	-	1695	hard sand, coarse
1695	-	1750	conglomerate
1750	-	1780	hard rock mixed with lime
1780	-	1801	brown sand rock
1801	-	1806	very hard conglomerate
1806	-	1813	conglomerate
1813	-	1814	sandstone
1814	-	1837	sandstone, 6' congl. 18'

Casing record	?	876'	with shoe
	8½"	1328'	with shoe
	8¼"	1405'	Cemented
	6-5/8"	to bottom, with shoe.	

Well No. 1, Penrod, Whitlock Oil Company NE¼SE¼NE¼ sec. 36-10S-28E.

40	120	Sandand shale
120	135	Sady shale and water
135	155	Brown and blue shale
155	165	Blue shale
165	180	Sand and water, hole full
180	205	Brown and blue shale
205	215	Water sand, hole full
215	230	Brown and blue shale
230	240	Water sand, hole full
240	416	Shale, gray
416	640	Brown and light shale
640	650	Sandy shale; salt water
650	740	Brown shale
740	1015	Blue shale
1015	1022	Water sand; salt water
1022	1045	Brown shale
1045	1078	Brown sandy shale
1078	1094	Slight sandy shale (Light?)
1094	1-96	Shells gypsum (selenite)
1096	1104	Brown shale
1104	1115	Light gypsum shale
1115	1125	Sand, water
1125	1165	Brown shale
1165	1185	Sand, water
1185	1197	Brown shale
1197	1208	Water sand; salt water
1208	1212	Blue shale
1212	1260	Sand and gravel; salt water
1260	1274	Brown and green shale
1274	1284	Water sand; salt water
1284	1323	Brown sandy shale
1323	1328	Red clay, hot
1328	1350	Brown sandy shale
1350	1352	Water sand; salt water
1352	1363	Brown shale
1363	1364	Coarse water gravel; fresh artesian water, 108 deg.
1364	1369	Fine sand; fresh artesian water, 108 deg.
1369	1405	Coarse water sand; fresh artesian water, 108 deg.
1405	1411	Conglomerate
1411	1422	Fine sand
1422	1477	Sand and gravel
1477	1614	Red sandstone
1614	1627	Hard shells
1627	1647	Brown sandstone
1647	1657	Hard sand
1657	1675	Hard sand
1675	1695	Hard sand, coarse
1695	1750	Conglomerate
1750	1780	Hard rock mixed with lime
1780	1801	Brown sand rock
1801	1806	Very hard conglomerate
1806	1813	Conglomerate
1813	1814	Sandstone
1814	1837	Sandstone, 6 ft., conglomerate 18 ft.
1925		Total depth

Log furnished by Bob Thomas of Globe, Arizona.

Casing record:

10"	876'	with shoe
8¼"	1328'	with shoe
8¼"		cemented in at 1405'
6-5/8"		set with shoe to bottom
6-5/8"		pulled and plugged back to bottom of water sand, 1477'

Whitlock No. 1. State land. SE¼ NE¼ Section 36, T. 10 S., R. 28 E., G. & S. R. M. Drilling with cable tools at 1,900 feet. Considerable water flowing from top of casing.

Log of Whitlock No. 1
(Furnished by Bob Thomas, Globe, Arizona)

0 -	40 -	Sand
40 -	120 -	Sand and shale
120 -	135 -	Sandy shale and water
135 -	155 -	Brown and blue shale
155 -	165 -	Blue shale
165 -	180 -	Sand and water (hole full)
180 -	205 -	Brown and blue shale
205 -	215 -	Water sand (hole full)
215 -	230 -	Brown and blue shale
230 -	240 -	Water sand (hole full)
240 -	415 -	Gray shale
415 -	640 -	Brown and light shale
640 -	650 -	Sandy shale (salt water)
650 -	740 -	Brown shale
740 -	1,015 -	Blue shale
1,015 -	1,022 -	Water sand (salt water)
1,022 -	1,045 -	Brown shale
1,045 -	1,078 -	Brown sandy shale
1,078 -	1,094 -	Slight sandy shale
1,094 -	1,096 -	Shells gypsum (selenite)
1,096 -	1,104 -	Brown shale
1,104 -	1,115 -	Light gypsum shale
1,115 -	1,125 -	Sand (water)
1,125 -	1,165 -	Brown shale
1,165 -	1,185 -	Sand (water)
1,185 -	1,197 -	Brown shale
1,197 -	1,208 -	Water sand (salt water)
1,208 -	1,218 -	Blue shale
1,218 -	1,260 -	Sand and gravel (salt water)
1,260 -	1,274 -	Brown and green shale
1,274 -	1,284 -	Water sand (salt water)
1,284 -	1,323 -	Brown sandy shale
1,323 -	1,328 -	Red clay (hot)
1,328 -	1,350 -	Brown sandy shale
1,350 -	1,352 -	Water sand (salt water)
1,352 -	1,355 -	Brown shale
1,355 -	1,364 -	Coarse water gravel (Fresh artesian water 108°)
1,364 -	1,389 -	Fine sand (Fresh artesian water 106°)
1,389 -	1,405 -	Coarse water sand (Fresh artesian water 108°)
1,405 -	1,411 -	Conglomerate
1,411 -	1,422 -	Fine sand
1,422 -	1,477 -	Sand and gravel
1,477 -	1,614 -	Red sandstone
1,614 -	1,627 -	Hard shells
1,627 -	1,647 -	Brown sandstone
1,647 -	1,657 -	Hard sand
1,657 -	1,675 -	Hard sand
1,675 -	1,695 -	Hard sand, coarse
1,695 -	1,750 -	Conglomerate
1,750 -	1,780 -	Hard rock mixed with lime
1,780 -	1,801 -	Brown sand rock
1,801 -	1,806 -	Very hard conglomerate
1,806 -	1,813 -	Conglomerate
1,813 -	1,814 -	Sandstone
1,814 -	1,857 -	Sandstone 6 feet; conglomerate 18 feet.

Casing Record

10" - 676 feet with shoe; 8¼" - 1,323 feet with shoe; 8¼" - cemented in at 1,405 feet; 6 5/8" casing with shoe set to bottom.

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From Canfield Rpt., 1928

Whitlock Oil Co. State #1
~~Whitlock Oil Co. Deaton #1~~

GRAHAM COUNTY

State #1, SE¼ NE¼ 36-10S-28E. Log from ABM files

0	40	Sand
40	120	Sand and shale
~~xx~~ 120	135	Sand shale and water
135	155	Brown and blue shale
155	165	Blue shale
~~16~~5	180	Sand and water (hole full)
180	205	Brown and blue shale
205	215	Water sand (hole full)
215	230	Brown and blue shale
230	240	Water sand (hole full)
240	416	Gray shale
416	640	Brown and light shale
~~64~~0	650	Sandy shale (salt water)
650	~~8~~40	Brown shale
740	1015	Blue shale
1015	1022	Water sand (salt water)
1022	1045	Brown shale
1045	1078	Brown sandy shale
1078	1094	Slight sandy shale
1094	1096	Shells gypsum (selenite)
1096	1104	Brown shale
1104	1115	Light gypsum shale
1115	1125	Sand (water)
1125	11~~6~~5	Brown shale
1165	1185	Sand (water)
1185	1197	Brown shale
1197	1208	Water sand (salt water)
1208	1212	Blue shale
1212	1260	Sand and gravel (salt water)
1260	1274	Brown and green shale
1274	1284	Watermsand (salt water)
1284	1323	Brown sandy shale
1323	1328	Red clay (hot)
1328	1350	Brown sandy shale
1350	1352	Water sand (salt water)
1352	1363	Brown shale
1363	1364	Coarse water gravel (Fresh artesian water at 108°.
1364x~~1366x1369x~~	1369	Fine sand (Fresh art. water at 108°.
1369	1405	Coarse water sand
1405	1411	Conglomerate
1411	1422	Fine sand
1422	1477	Sand and gravel
1477	1614	Red sandstone
1614	1627	Hard shells
1627	1647	Brown sandstone
1647	1657	Hard sand
1657	1675	Hard sand
1675	1695	Hard sand, coarse
1695	1750	Conglomerate

Permit

LOG [illegible] WELL

[illegible] Sec. 36, T. 10 S., R 23 E.

[illegible] County, Arizona

DEPTH	FORMATION	THICKNESS
0 - 40 ft.	Sand	40 ft.
40 - 120 "	Sand and shale	80 "
120 - 135 "	Sandy shale and water	15 "
135 - 155 "	Brown and blue shale	20 "
155 - 165	Blue shale	10 "
165 - 180 "	Sand and water (hole full)	15 "
180 - 205 "	Brown and blue shale	25 "
205 - 215 "	Water sand (hole full)	10 "
215 - 230 "	Brown and blue shale	15 "
230 - 240 "	Water sand (hole full)	10 "
240 - 416 "	Grey shale	176 "
416 - 640 "	Brown and light shale	224 "
640 - 650 "	Sandy shale (salt water)	10 "
650 - 740 "	Brown shale	90 "
740 - 1015 "	Blue shale	275 "
1015 - 1022 "	Water sand (salt water)	7 "
1022 - 1045 "	Brown shale	23 "
1045 - 1078 "	Brown sandy shale	33 "
1078 - 1094 "	Light sandy shale	16 "
1094 - 1096 "	Shale Gypsum (selenite)	2 "
1096 - 1104 "	Brown shale	8 "
1104 - 1115 "	Light gypsum shale	11 "
1115 - 1125 "	Sand (water)	10 "
1125 - 1165 "	Brown shale	40 "
1165 - 1185 "	Sand (water)	20 "
1185 - 1197 "	Brown shale	12 "
1197 - 1208 "	Water sand (salt water)	11 "
1208 - 1212 "	Blue shale	4 "
1212 - 1260 "	Sand and gravel (salt water)	48 "
1260 - 1274 "	Brown and green shale	14 "
1274 - 1284 "	Water sand (salt water)	10 "
1284 - 1322 "	Brown sandy shale	38 "
1322 - 1328 "	Red clay (hot)	6 "
1328	Brown sandy shale	

975 feet 10" casing with shoe
1328 " 8" " " "

Aug. 22nd, 1927 — S. M. [illegible], Driller.

CHANGED DRILLERS - BEST THING THE COMPANY EVER DONE.

DEPTH	FORMATION	THICKNESS
1328 - 1350 ft.	Brown sandy shale	22 ft.
1350 - 1352 "	Water sand (salt water)	2 "
1352 - 1363 "	Brown shale	11 "
1363 - 1364 "	Coarse water gravel (Fresh artesian water 102°)	1 "
1364 - 1369 "	Fine sand	5 "
1369 - 1405 "	Coarse water sand	36 "
1405 - 1411 "	Conglomerate	6"
1411 - 1422 "	Fine sand	11 "
1422 - 1477 "	Sand and gravel	58 "
1477 - 1614 "	Red sand stone	37 "
1614 - 1627 "	Hard shells	13 "
1627 - 1647 "	Brown sand stone	20 "
1647 - 1657 "	Hard sand	10 "
1657 - 1675 "	Hard sand	18 "
1675 - 1700 "	Hard sand, coarse	25 "
1700 - 1750 "	Conglomerate	50 "
1750 - 1780 "	Hard rock mixed with lime	30 "
1780 - 1801 "	Brown sand rock	21 "
1801 - 1806 "	Very hard conglomerate	5 "
1806 - 1813 "	Conglomerate, 6 ft, 1 ft. sandstone	7 "
1813 - 1837 "	Sand stone 6 ft. 18 ft. conglomerate	24 "

8¼" casing cemented in at 1405
6 5/8" casing with shoe set to bottom

April 17, 1928 — Wm. B. [illegible], Driller.

LOG OF WHITLOCK WELL No. 2, ... Sec. 20, T.10 S.R. 28E (Unsurveyed)

Graham County, Arizona

DEPTH FEET			FORMATION	THICKNESS
0	to	12	Cemented gravel	12 ft.
12	"	42	Whitish sand	30 "
42	"	48	Brown clay	6 "
48	"	93	Brown sand	45 "
93	"	103	Sand with sand stone shells	10 "
103	"	115	Brown sand	12 "
115	"	130	Brown clay	15 "
130	"	136	Hard conglomerate	6 "
136	"	155	Fine brown sand	19 "
155	"	173	Brown clay and boulders	18 "
173	"	193	Cemented gravel and boulders	20 "
193	"	198	Sand stone	5 "
198	"	206	Gravel	8 "
206	"	253	Sandy shale and shells	47 "
253	"	282	Sandy shale and shells	29 "
282	"	285	Blue shale	3 "
285	"	296	Blue and brown shale	11 "
296	"	325	Blue and brown shale with shells	29 "
325	"	343	Soft shale	18 "
343	"	373	Blue shale	30 "
373	"	382	Hard lime shells	9 "
382	"	510	Hard red rock (conglomerate)	128 "

6" casing landed at 386 ft

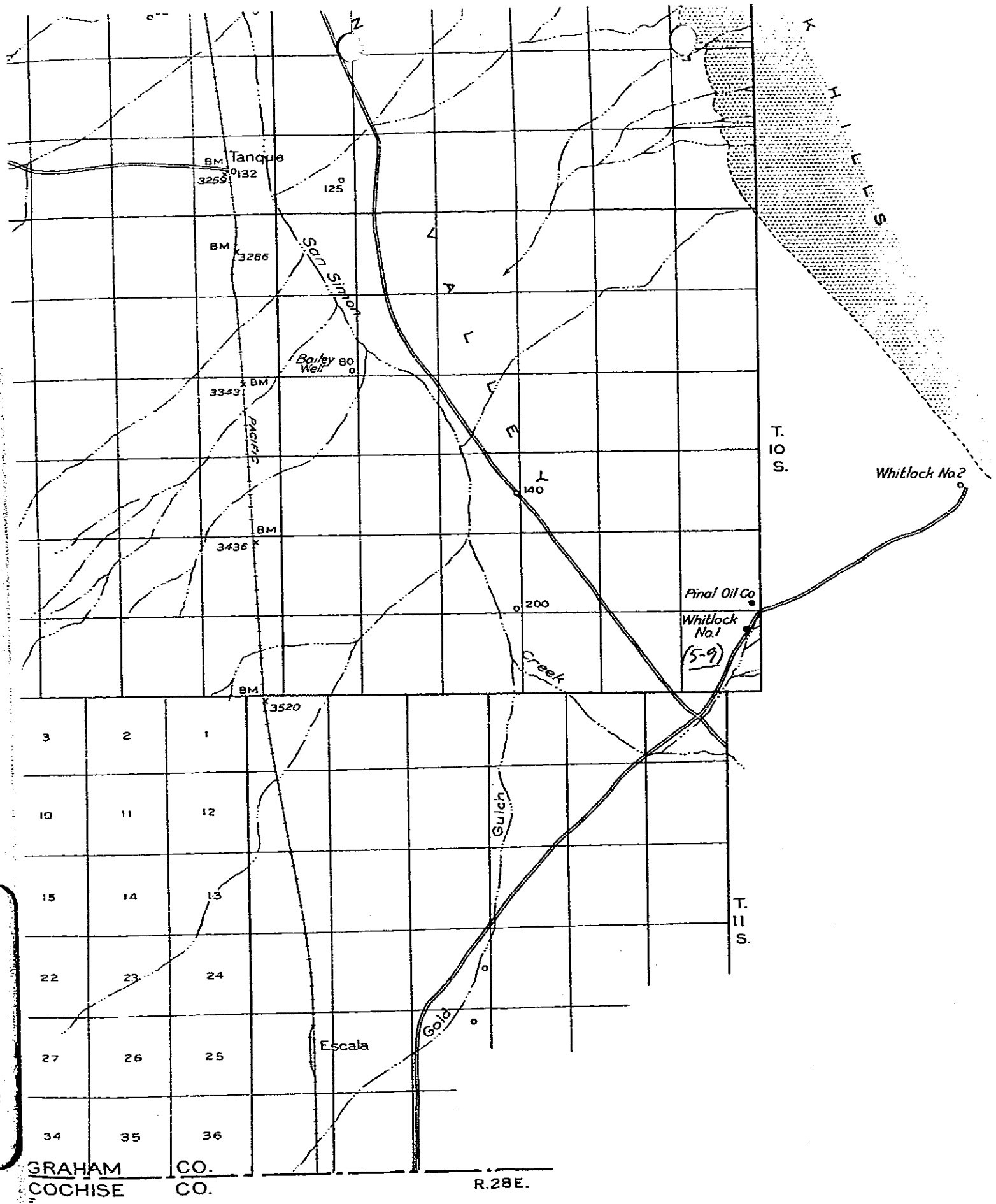
J. Barnette, Driller

April 19th, 1938

Whitlock #2 log

Location: Section	T.	R.	County	Land status	Operator, lease, and well number	Completion date	Elevation (feet)	Total depth (feet)	Geologic formation: Surface	Geologic formation: Bottom	Status
Northeast quadrant—Continued											
SW¼SE¼ 19,	41 N	31 E	Apache	Indian	El Paso Natural Gas Co., Navajo Tribal 4-X	1956	5081	690	Jm	Jm	A
SW¼SE¼ 34*	42 N	18 E	Navajo	do	The Texas Co., Navajo 1	1953	6662	4523	Tcs	De	A
Southeast quadrant											
SE¼SE¼ 17	1 S	8 E	Pinal	State	Robison-Mason, Nickols 1	1952	1535	2836	Qal	gr	A
SW¼ 32	2 S	10 E	do	do	East Lanron Oil Co., State 1	1949		1020	Qal	v	A
NE¼NW¼ 36	4 S	3 E	do	do	Robison-Mason, Harbor 1	1950	1195	3642	Qal	gr?	A
S½SW¼ 25	4 S	9 E	do	Par'd	Schoenheit, Moorhouse 1	1945	1462	415	Qal	Qal	A
NW¼NW¼ 19	4 S	23 E	Graham	State	R. S. Knowles 1	1919		810	Qal	QTg	W
SW¼SW¼ 31	5 S	10 E	Pinal	Public	Western Oil Fields Inc., Hines 1	1955	1625	5142	Qal	v	A
8*	5 S	14 E	do	Par'd	Hackberry	1905		700			A
NE¼SE¼ 17	5 S	24 E	Graham	do	A. C. Alexander 1	1906		1400	Qal		A
SW¼NE¼ 30	5 S	24 E	do	do	Gila Oil Synd. 1	1931		2645	Qal		A
NE¼NE¼ 30	5 S	24 E	do	do	Ashurst Oil Co. 1	1928		1247	Qal		A
SE¼SE¼ 25	6 S	7 E	Pinal	do	Casa Grande Oil Development Assoc., Laveen 1	1945	1474	4742	Qal	gr	A
NW¼NE¼ 13	6 S	24 E	Graham	do	Underwriters Synd. of N. Y., Mack 1	1928		3767	Qal		A
NE¼NW¼ 22	7 S	8 E	Pinal	do	Hatchett and others, McFarland 1	1945	1500	1260	Qal	Qal	A
SW¼ 8	7 S	26 E	Graham	do	Safford City 1	1907		1830	Qal		W
17	7 S	26 E	do	do	Southern Pacific Railroad	1907		1820	Qal		W
SE¼SE¼NW¼ 12	8 S	7 E	Pinal	do	Dr. Creed Cherry	1948	1685	2700	Qal		W
SE¼SW¼SE¼ 25	8 S	16 E	do	do	Santa Maria Exploration Co. 1	1948	2909	2145	Qal		A
33	8 S	17 E	do	do	San Pedro Oil Co., Smith 1	1930		1485	Qal		A
SE¼NW¼ 6	8 S	26 E	Graham			1932		1700	Qal		W
SE¼NW¼ 6	8 S	26 E	do	Par'd	Idle Oil Co., Healy 1	1913	2920	1800	Qal		A
14	9 S	21 E	do	do	Waggoner, Eureka Ranch 3	1948		1501	Qal		W
SW¼NW¼NE¼ 15	10 S	10 E	Pinal	State	Ariz. Public Service Co.	1952		1950	Qal	QT	W
SE¼SE¼NE¼ 15	10 S	10 E	do	do	do	1953		2240	Qal		W
SE¼SE¼ 25	10 S	28 E	Graham	Public	Bear Springs Oil and Gas Co., Allen 2 (Pinal 1)	1929	3350	1555	QTg		A
SE¼SE¼ 32	10 S	28 E	do	State	J. C. Clark 1	1926		1000	QTg		W
NW¼NE¼ 35	10 S	28 E	do	Public	U. S. Oil Co. 1	1917		900	QTg		A
NE¼NE¼ 36	10 S	28 E	do	State	Whitlock Oil Co., State 1	1927		1925	QTg		A
SW¼NE¼ 20	10 S	29 E	do	Public	Whitlock Oil Co., Penrod 1	1930	3475	521	QTg		A
20	10 S	30 E	do	State	U. S. Oil Refining Co. 1	1920		700	Qal		A
NE¼SE¼ 27	11 S	10 E	Pima	Public	M. T. Berry Mineral Development Project, Berry 1	1953	1920	3212	Qal	v	A
NE¼NW¼ 6	11 S	23 E	Graham	Par'd	Hooker and others 1	1930	4400	1985	Qal		A
SW¼NE¼ 28	11 S	28 E	do	Public	Bear Springs Oil and Gas Co., Reed 1	1928	3220	670	QTg		A
28	11 S	28 E	do	Par'd	Howle 1	1912		1100	Qal		A
SE¼ 1	11 S	29 E	do	do	Seely	1927		650	QTg		W
NE¼ 14	11 S	29 E	do	Public	S. L. Martin, Martin 1		3400	676	QTg		W
NW¼ 26	11 S	29 E	do	Par'd	Howard			800	QTg		W
SE¼SE¼ 27	11 S	29 E	do	Public	S. L. Martin, Martin 2	1928		800	QTg		W
SW¼NW¼ 27	11 S	29 E	do	Par'd	S. L. Martin, Martin 3	1927		750	QTg		W
NW¼SW¼ 27	11 S	29 E	do	Public	S. L. Martin, Martin 4	1928		815	QTg		A
NE¼NE¼ 35	11 S	29 E	do	Par'd	S. L. Martin, Martin 1	1927		680	QTg		W
NE¼SW¼ 6	12 S	11 E	Pima	State	Eloy Development Assoc., State 1	1949	1975	4950	Qal		A
NE¼SE¼ 29	13 S	22 E	Cochise	do	Duncan, Clayton 1	1945	4953	1000	Qal	QT	A
NW¼NW¼ 29	13 S	22 E	do	do	Duncan, Clayton 2	1945	4852	1180	Qal		A
NE¼SE¼ 33	13 S	22 E	do	do	Duncan and others, State 1	1955	4953	1428	Qal		A
NE¼SE¼ 33	13 S	22 E	do	do	Duncan and others, State 2	1957	4953	5307	Qal		A
SW¼SE¼ 23	13 S	24 E	do	Par'd	A. S. Waddell and others, McComb 1	1949	4172	6865	Qal	v	A
SE¼NW¼ 16	13 S	28 E	do	State	Bowie Oil Syndicate 1	1925	3700	4110	Qal		A
SE¼NE¼ 27	13 S	30 E	do	Par'd	S. W. Funk and others, San Simon 1	1939	3600	6668	Qal	v?	A
SW¼SE¼ 31	13 S	31 E	do	do	M. K. D. Fitzwater, Thayer 1	1947	3600	4137	Qal	v	A
31	13 S	31 E	do	do	State of Ariz., Winslow 1		3600	1190	Qal		W
SE¼SW¼ 30	14 S	24 E	do	do	Francis Brothers Oil Co., Proctor 1	1950	4185	4605	Qal	v	A
SW¼NE¼ 4	14 S	25 E	do	do	Waddell and Duncan, Lawson 1	1949	4225	2702	Qal	QT	A
NE¼NE¼ 6	14 S	25 E	do	do	Geronimo Oil Co., Bruning 1	1931	4100	770	Qal	QT	A
NE¼NE¼ 6	14 S	25 E	do	do	Geronimo Oil Co.-Clark, Holliday 1	1930	4100	428	Qal		A
6	14 S	25 E	do	do	Southern Pacific Railroad	1928	4075	650	Qal	QT	W
SE¼SE¼ 9	14 S	25 E	do	State	Wilcox Oil and Gas Syndicate 1	1925	4175	2360	Qal		A
SE¼NW¼ 34	14 S	30 E	do	do	Ryan and others, Ryan 1	1931	4100	990	Qal		A
NE¼NE¼ 36	14 S	30 E	do	do	Ariz. Oil and Gas Development Co., State 1	1954	3866	7568	Qal	pC?	A
SW¼SE¼ 16	14 S	31 E	do	do	State of Ariz. 1	1923	3675	2000	Qal		W
NE¼NE¼ 26	14 S	31 E	do	Par'd	Carr 1	1927		865	Qal		A
SE¼ 19	15 S	26 E	do	do	Benedum-Trees Co., Arzberger 1	1931	4250	3298	Qal		A
NW¼SE¼ 34	16 S	20 E	do	do	Pomerene 1	1951		1000	Qal	QT	W
NW¼NW¼ 36	16 S	24 E	do	State	S. W. McCall, State 1	1928	4250	1510	Qal		A
NW¼NE¼ 9	16 S	31 E	do	do	Portal Drilling Co., Ellis 1	1953	4350	5353	Qal	v	A
NE¼NE¼ 10	16 S	31 E	do	do	L. A. Thomson, State 1	1958	4310	5234	QTg		A
NW¼NE¼ 17	17 S	19 E	do	Par'd	Century Petroleum Co., Colglazier 1	1931	4250	1550	Qal		A
NE¼SW¼ 33	18 S	18 E	Pima	State	Cienega Basin Oil and Gas Co., State 1	1952	4800	560	K?	K	A
NW¼NW¼ 34	18 S	18 E	do	do	Ted Jones Drilling Co., Juanita 1	1956	4860	2656	K?	K	A
SE¼SW¼ 22	19 S	17 E	do	Par'd	Ariz. Oil Exploration Co., Boyce 1	1942	4450	2991	Qal	v	A

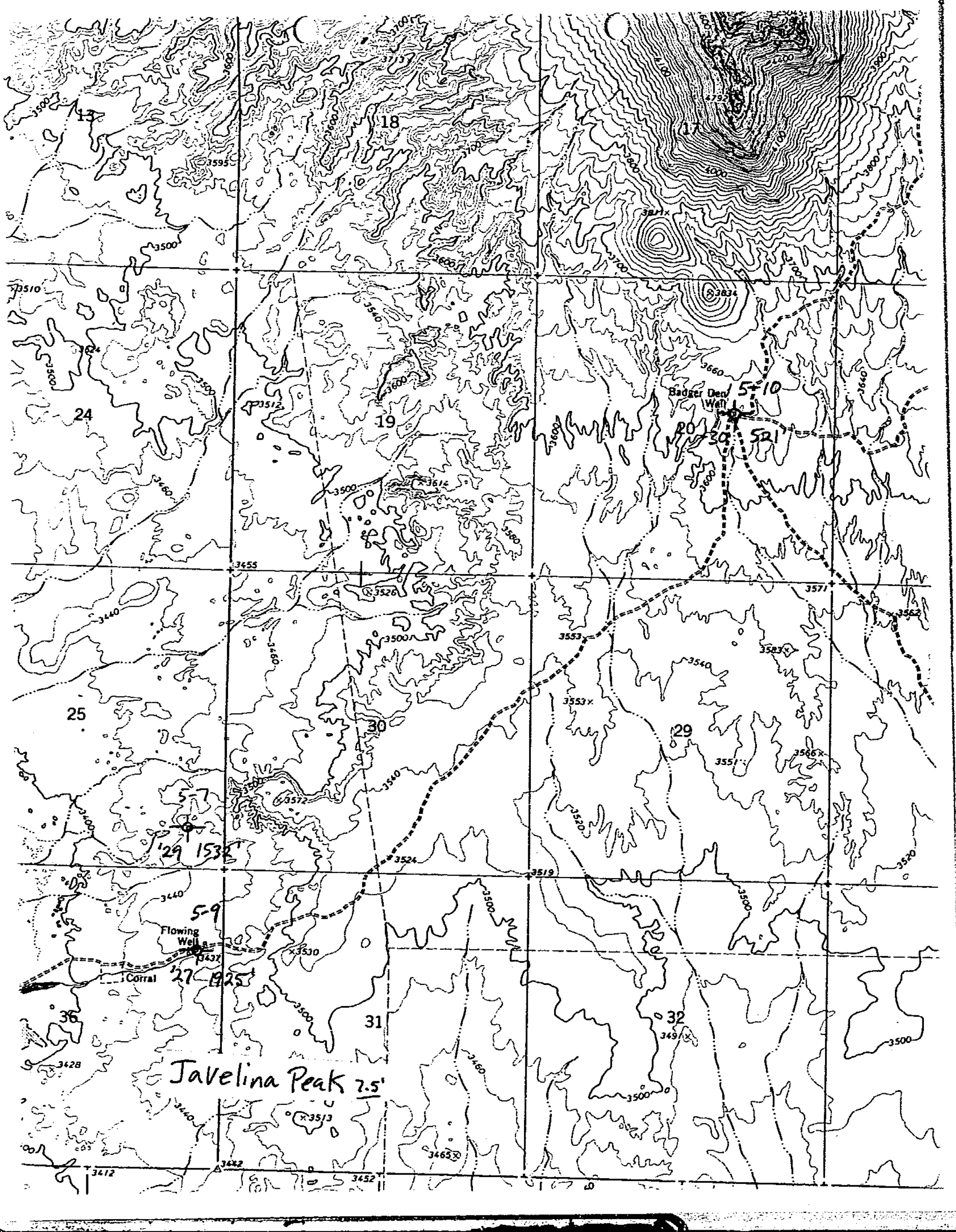
OM-201, 1959



Geology by Maxwell M. Knechtel.

COUNTY, ARIZONA

Plate 46, WSP 756-F, 1938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'29 1532'
5-9
Flowing Well
Corral
'27 1925'
Javelina Peak 7.5'

Hot Well Dunes

story and photos by Diane Drobka

Hot Well sprang into existence by accident. Back in 1928 when Pinal Oil Company was exploring the San Simon Valley for oil, they hit water, water that was exceptionally hot. The artesian well, producing in excess of 250 gallons of water per minute at a temperature of 106 degrees Fahrenheit, became an attraction for those that enjoyed relaxing in the hot mineral waters.

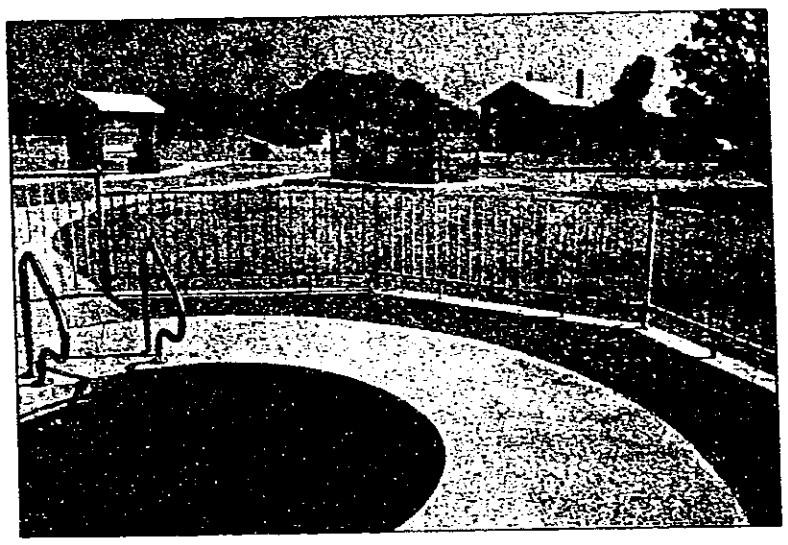
BLM acquired the area in 1985. The operations staff, along with numerous volunteers, put in many hours improving it. Now, two sunken tubs, a shallow wading pool for kids, ten campsites with grills, and a new restroom make the site a popular destination. The restroom and one hot tub are wheelchair accessible and a cable keeps off-highway vehicle use away from the tubs, allowing a more quiet and relaxing soak. Each year, thousands of people come to Hot Well Dunes to soak in the tubs, camp, picnic, and ride their OHVs in the sand.

Partners and local dignitaries joined the BLM on Tuesday, April 23, to dedicate the new facilities at the Hot Well Dunes Recreation Area. The dedication ceremony, cosponsored by Hacienda Motorcycles, culminated a multi-year team effort that included the BLM and many partners.

The Safford District acquired the lands encompassing Hot Well Dunes through a land exchange with the state of Arizona. BLM managers realized the importance of the area for recreation and designated approximately 2,000 acres as a Special Recreation Management Area. Many of the improvements at the site were made possible only through the individuals and organizations that were interested in improving the site.

BLM Arizona State Director Denise Meridith and Safford District Manager Bill Civish recognized the contributions of the many volunteers and organizations that participated in Hot Wells' transformation. These included students from the University of Oklahoma who spent six weeks conducting archaeological surveys of the site, boy scouts who conducted litter clean-up projects, and volunteers who planted cottonwood trees to provide shade.

Grazing permittee Pete Brawley was instrumental in the designation and development of the Hot Well Dunes Recreation Area. From the time BLM acquired this area, Pete worked to accommodate recreation use even though this meant extra effort to run his cattle operation. In 1992, Brawley worked with the Safford District to withdraw 2,000 acres of public land from livestock grazing so that the recreation area could be developed and vehicles controlled. He also created ponds, filled by the run-off from the well. These ponds provide water for both livestock and wildlife, along with



(opposite page and above) Improvements at Hot Well Dunes have made the area functional and inviting. Thousands of people take advantage of the site each year.

a place to fish. Brawley continues to help in the management of the area by maintaining the perimeter fence.

The Nomad Motorcycle Club from Sierra Vista had been coming to Hot Well Dunes for many years. They realized early on that to keep areas open and available for off-highway vehicle riding, they needed to get involved with land management agencies. The Nomads installed posts and cable around the tubs and restroom, assisted with construction projects, patrolled and maintained the perimeter fence, helped with general clean-up, and educated members, as well as non-members, on proper off-highway driving procedures.

Another person who realized the importance of the area was Rick Hatch, owner of Hacienda Motorcycles. Since his business includes sales of dirt bikes and OHVs that are used to ride the dunes, Hatch joined BLM as a cosponsor of the dedication, providing lunch and a fleet of ten four-wheelers. This gave everyone attending the dedication an opportunity to try riding the dunes, which was the highlight of the day for many.

Improvements to the access road were funded through a $30,000 grant from the Arizona Game and Fish Department's Heritage Fund, a product of Arizona Lottery money. The Hot Well facilities would not have been possible without financial support from the Arizona State Parks' Off-Highway Vehicle Recreation Fund which, in 1994, gave BLM a $61,000 grant to improve the site. The OHV monies are a percentage of the Arizona sales tax on gasoline.

The work at Hot Well Dunes is not yet complete; last month, BLM was awarded another OHV grant to continue work. This grant includes money for a walkway to the second tub, covered shade ramadas, improvements to a campsite that a site host will occupy, and development of a brochure.

Local dignitaries, volunteer cooperators and representatives from contributing organizations joined BLM Arizona State Director Denise Meridith in dedicating the new facilities at the Hot Well Dunes Recreation Area.

State of Arizona
Arizona Geological Survey
416 W. Congress, Suite 100
Tucson, Arizona 85701
(520) 770-3500

Fife Symington
Governor

Larry D. Fellows
Director and State Geologist

August 30, 1996

Mr. John P. Wilson
1109 Skyway
Las Cruces, New Mexico 88001-4016

file 5-9

Dear Mr. Wilson:

I received your final report and photographs yesterday, and read your report last night. I enjoyed reading it. It's a good report. I didn't find anything wrong with the report and I sure couldn't tell were you were on thin ice. I was, am fascinated by the subject.

It's too bad the BLM didn't tie the old equipment into the current development of the area to provide a sense of appreciation as to why the hot well was drilled in the first place -- like arranging it around the refurbished wellhead to somewhat mimic its original relationship to the hole as it was being drilled in the 1920's. At least they didn't just cart the stuff off to the dump.

Your conclusion about oil tests on the Gila River Indian lands agrees with our records, which indicate that no oil tests have ever been drilled on Gila River Indian lands. We carry the Isabel-Hartner as a water well, so it is not plotted or listed on our *Arizona Well Location Map and Report*. In appreciation of your providing me with a copy of your good report, I have enclosed a complimentary copy of our well location map and report for your files.

Let me know if I may be of further assistance on any oil and gas matter in Arizona.

Sincerely,

Steven L. Rauzi
Oil and Gas Program Administrator

Enclosure

1109 Skyway
Las Cruces, New Mexico
88001-4016
August 27, 1996

Mr. Steven L. Rauzi,
Oil & Gas Program Administrator
Arizona Geological Survey
416 W. Congress, Suite 100
Tucson, Arizona 85701

file 5-9

Dear Mr. Rauzi:

Enclosed is a copy of my report on the two oil well sites south of Safford, Az., that I researched for the Safford District BLM office; also a set of the photographs that I took when I visited the area in early July. The report has gone in to the BLM (actually, to Dr. Pat Gilman at the University of Oklahoma) and I assume that when my check arrives, that project will be over.

I would like to ask that if you see anything wrong in my report, would you let me know? I was on fairly thin ice in some places and had to say more what I thought than what I knew.

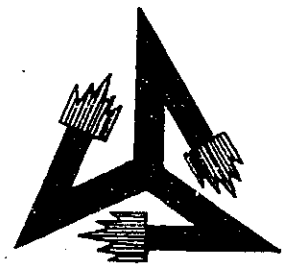
My next project will evidently be one of historical research for the Gila River Indian Community (Reservation) which is part of an ongoing major cultural resources inventory. My responsibility will be a historical overview and drafting a series of research questions appropriate to the historic-period sites on that reservation. Speaking of which, I've looked over Oil & Gas Investigations map OM-201 again and do not find any old oil wells shown on that reservation. Is this correct? The closest ones appear to be Isabel-Hartner Co. in T1N R1E, completed in 1940, and Robison-Mason, Harbor 1, in T4S R3E, completed in 1950. Both seem to be off the reservation, however. Have I overlooked anything?

Sincerely,

John P. Wilson

John P. Wilson

P.S. Flyer for book just out is enclosed also.



BLACK GOLD IN THE SAN SIMON

Exploring for Oil in Southeastern Arizona, 1927 - 1931

John P. Wilson

Las Cruces, New Mexico

file 5-9

Prepared for Dr. Patricia A. Gilman, Department of Anthropology,
University of Oklahoma, and the Safford, Arizona, District
Office of the Bureau of Land Managment

Report No. 75

August 1996

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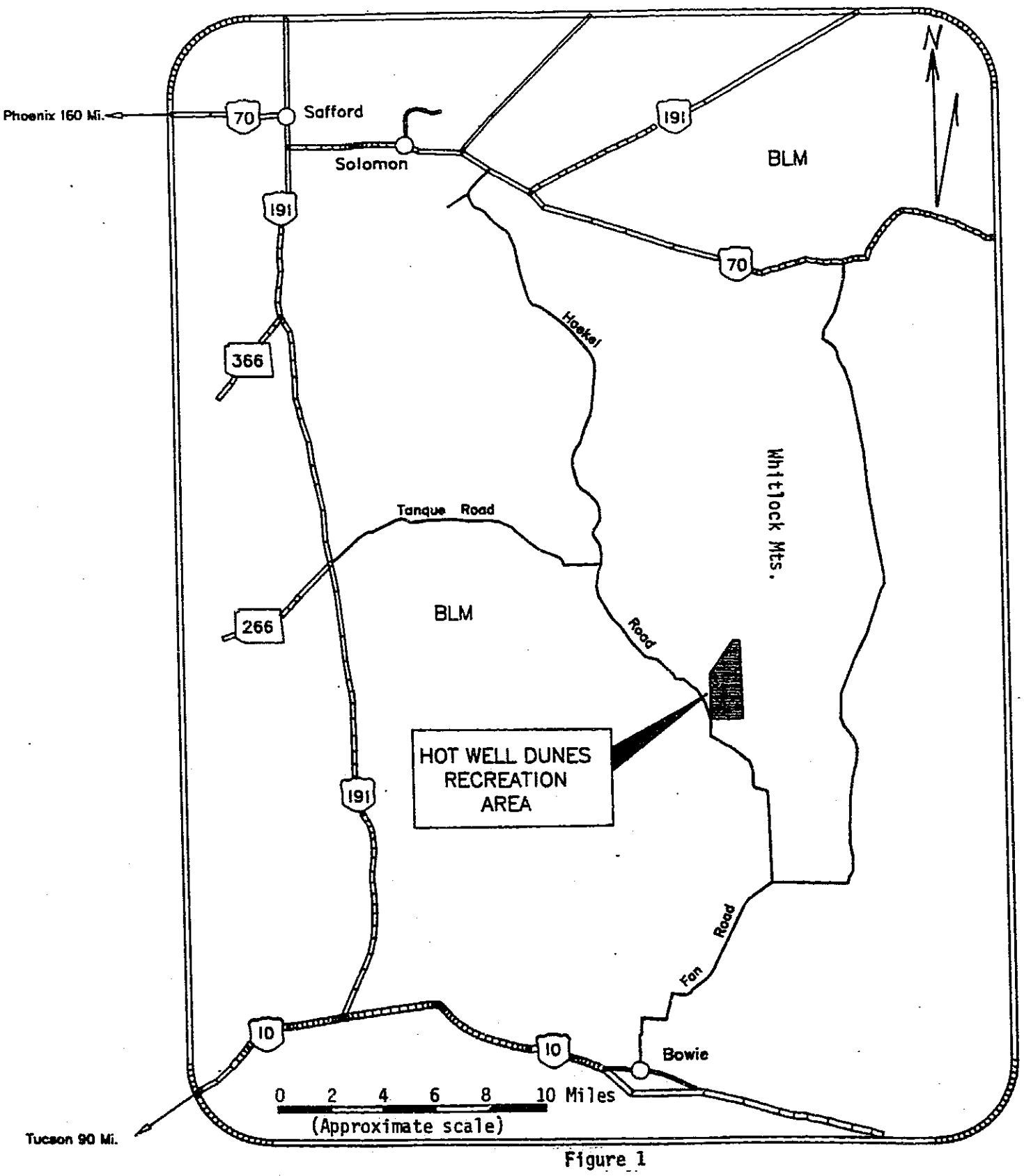
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Solomon
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Hoekel
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Tanque Road
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BLM
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191
Fan Road
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Bowie
0 2 4 6 8 10 Miles
(Approximate scale)
Tucson 90 Mi.

Figure 1

INTRODUCTION

On March 1, 1996, Dr. Patricia A. Gilman of the University of Okahoma asked the present writer if he would investigate two historic sites as a part of her Hot Well Dunes Archaeological Project in the San Simon region of southeastern Arizona (Fig. 1). The intention was to mitigate future impacts by revisiting these sites, recorded originally for the University of Arizona, to document their layout and contents, and determine their age, nature, and backgrounds. It was thought that the actual Hot Well site (AZ:CC:7:54(ASM)) had been the location of a wildcat oil test called Whitlock No. 1, drilled in 1927-28 (Fig. 4). This well still discharged warm water, and abandoned drilling equipment was reported to be present.[1] A second site (AZ:CC:7:57(ASM)) had been described as two historic trash dumps, possibly 40 to 60 years old, with a damned pond and an overturned automobile shell. These features were somewhat dispersed, but lay approximately one-third of a mile north of the first site (Fig. 2). At the time of its recording in 1992 it was thought that AZ:CC:7:57 might mark a CCC camp location from the 1930's, but a more recent opinion held that it was probably a camp used by the Pinal Oil Company.[2]

A purchase order from the Safford, Az., Bureau of Land Management office allowed the writer to carry out the historical portion of the 1996 Hot Well Dunes Archaeological Project. This involved researching the histories of sites AZ:CC:7:54 (ASM) and AZ:CC:7:57 (ASM), updating the Arizona State Museum site survey forms for both, preparing a report to be included with the University of Oklahoma's final report of its investigations, and coordinating with Dr. Gilman for the field work and report preparation. This is the report; other aspects of the requirements have already been completed.

After copies of several references[3] and the site survey forms had been obtained, the two site locations were defined as the SE¼, NE¼, Section 36, T10S R28E (site AZ:CC:7:54) and the SE¼, SE¼, Section 25, T10S R28E (site AZ:CC:7:57) in Graham County, Az. (Fig. 3). These locations were sent to the Arizona Geological Survey, where the Oil and Gas Program Administrator, Mr. Steven Rauzi, promptly responded with copies of the cover sheets, well logs, contemporary newspaper articles, the table of exploratory wells from U.S. Geological Survey *Oil and Gas Investigations Map OM-201* (Arizona) and a section of the 1928 Canfield scouting report on oil and gas explorations in Arizona.

This sudden wealth of information was more than ample to document the Hot Well, AZ:CC:7:54, shown as "Flowing well" on the USGS Javelina Peak 7.5' topo map, as the wildcat oil well now listed as Whitlock Oil Co., State 1, completed in 1927. A second well drilled by the same company, Whitlock Oil Co., Penrod 1, is now shown as "Badger Den well" in the SW¼, NE¼, Section 20, T10S R29E (Fig. 3). This site, completed in 1930(?), had not been indicated for study. Site AZ:CC:7:57, however, coincided with the location given for another oil well, now designated Bear Springs Oil and Gas Co., Allen 2 (Pinal 1), completed in 1929. Whether the latter site had been a CCC camp as well, in the 1930's, was a question not settled until Mr. Manton Botsford, the archeologist at the BLM's Safford office, determined that the only CCC camp previously unaccounted for by location (Camp Joy Valley; SCS Camp A-7) had actually been about eight miles southeast from AZ:CC:7:57.

Research then concentrated upon learning more about the historical background of oil explorations in southeastern Arizona and the two sites in particular, now that we were virtually certain that both had been the locations of unsuccessful wildcat oil wells. Microfilms of the *Graham County Guardian and Gila Valley Farmer* newspaper, published at Safford, Az., were borrowed for the years 1927-1932 and numerous articles about oil drilling transcribed. The names of three companies involved with the two wells - Whitlock Oil Co., Pinal Oil Co., and Bear Springs Oil and Gas Co. - were sent to the Arizona Corporation Commission and copies

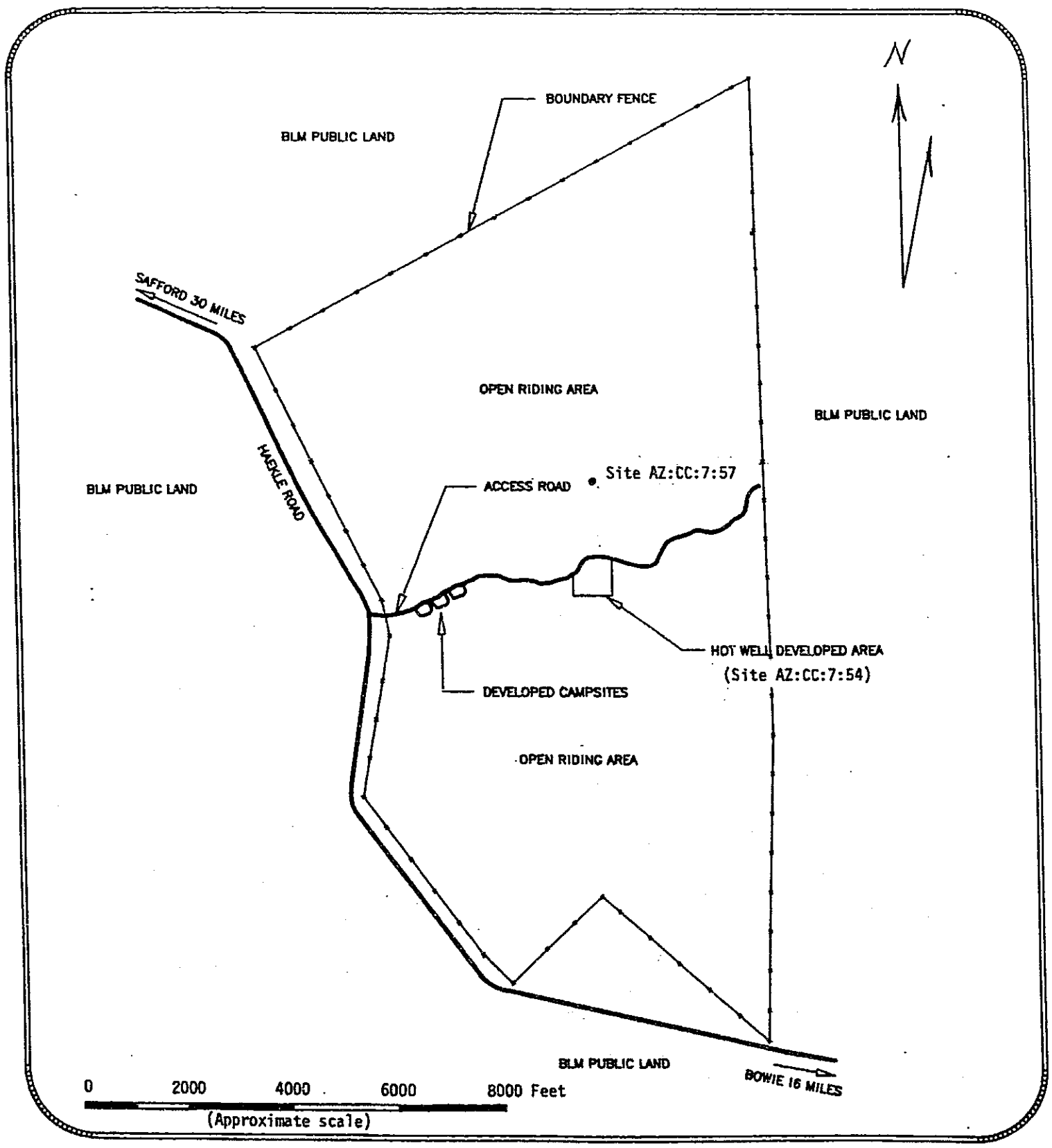

BOUNDARY FENCE
BLM PUBLIC LAND
SAFFORD 30 MILES
OPEN RIDING AREA
BLM PUBLIC LAND
HAEKLE ROAD
BLM PUBLIC LAND
ACCESS ROAD
Site AZ:CC:7:57
HOT WELL DEVELOPED AREA
(Site AZ:CC:7:54)
DEVELOPED CAMPSITES
OPEN RIDING AREA
BLM PUBLIC LAND
BOWIE 16 MILES
0 2000 4000 6000 8000 Feet
(Approximate scale)

Figure 2

of their articles of incorporation and annual reports were received in return.

At the Arizona Department of Library, Archives and Public Records, Ms. Donna Meszaros generously checked their hard copies (not on microfilm) of the Bowie, Az., *San Simon Valley News, San Simon Valley Oil News,*and *San Simon Valley Tribune* for the period January 1928 to January 1934, and xeroxed the most relevant articles from these. This was actually a single newspaper, published in the town closest to the drilling activity. She also found articles in the Globe paper, the *Arizona Record,* and one on CCC camps in the Willcox *Arizona Range News.* Between this collection, the clippings from the Arizona Geological Survey's files, and the transcripts made from the *Graham County Guardian* microfilms, a very complete run of newspaper coverage from the period was at hand.

The BLM offices in Phoenix and Safford confirmed that a homestead entry had been made, in 1932, on the lands where the Bear Springs Oil & Gas, Pinal 1 well was drilled. This case file was eventually located in the Pacific Southwest Region office of the National Archives and a copy of the file obtained. It showed that while no settlement had been made or cultivation attempted to 'prove-up' the claim, the entryman had been the business agent for the Bear Springs Oil & Gas Co. He died in November 1932 and the entry was cancelled in 1938. Some of the geologic literature and an oil & gas journal were scanned for information, and a few additional items found. Every line of research turned up something useful.

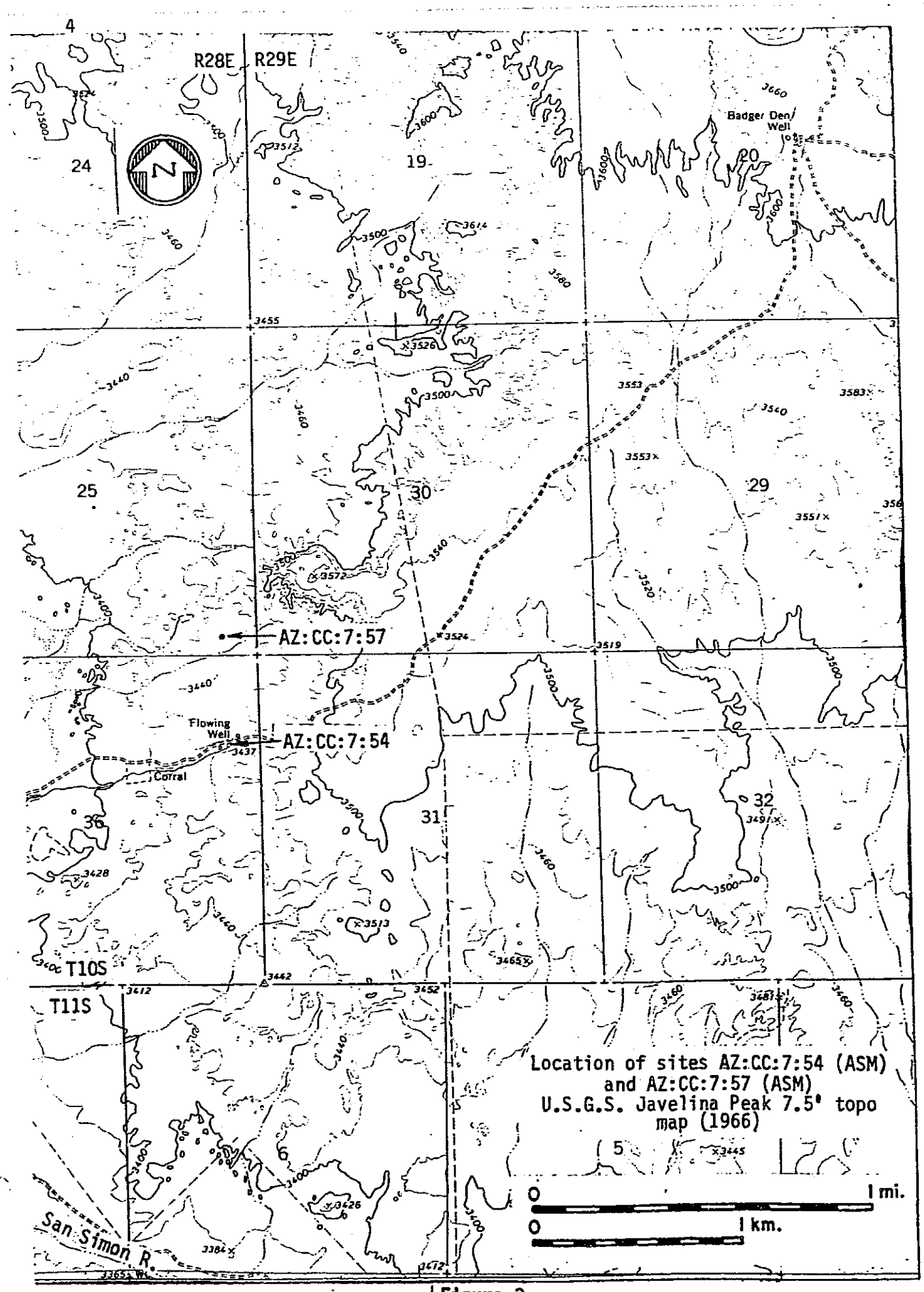
At the end of June in 1996, while Dr. Gilman's field school was ongoing in the San Simon Valley, the writer visited Safford, Az., and spent three days in rerecording the two sites, visiting two other former well locations not listed for study at the same time. Photographs were taken, maps and artifact inventories made, and the other activities incidental to a site survey record completed. At the end of this, the writer returned to Las Cruces, N.M., to prepare a report that incorporated the findings in the field with the historical background. The cooperation received from all parties during the course of research is responsible for whatever merit this study may possess. It was a pleasure to work with everyone.

HISTORICAL BACKGROUND

Arizona is not normally thought of as an oil-producing state, and through 1955 the only commercial production was 47 barrels of oil from a single well in Apache County.[4] This changed rapidly with the discovery of several new fields, all in the northeastern corner of the state. More than 37,000 barrels of crude oil were produced by 1960, while in 1967 production zoomed to almost 3,000,000 barrels.[5] The total in the most recent year (1995) is 71,067 barrels, more than 80 percent of which came from the 18 wells in the Dineh-bi-Keyah field near Lukachukai on the Navajo Indian Reservation.[6] Currently about 200 barrels of oil and 8.5 million cubic feet of gas per day flow from 22 oil and seven gas wells. Since 1954, wells in Arizona have yielded more than 20 million barrels of oil.[7]

The completion of commercial oil wells was preceded by more than fifty years of testing, showings of oil, and dry holes. Exploration was spurred initially by discoveries in surrounding states, beginning with southern California in the 1890's and then the old Spindletop oil field near Beaumont, Texas, in 1901. The first test well in Arizona was completed in 1903, and from then until the first commercial oil well was brought in in 1955, about 164 wells are known to have been drilled.[8] By 1967, 548 holes had been drilled for oil, gas or helium in the state.[9]

Until the discovery of oil in 1955, the pace of drilling was slow, but southeastern Arizona witnessed some of the exploratory activity. The U.S. Geological Survey tabulated four wells completed there between 1905 and 1910, four more through 1919, another six before 1927, and 22 between 1927 and 1931.[10] Only two more wells were completed in the southeast quadrant of the state prior to World War II: one in 1932, and one (S.W. Funk and others, San Simon 1) where drilling had commenced in 1930. The object of some wells was to find water; how many were in



Location of sites AZ:CC:7:54 (ASM)
and AZ:CC:7:57 (ASM)
U.S.G.S. Javelina Peak 7.5' topo
map (1966)

Figure 3

search of oil or gas is not known.

There appear to be no historical studies of this aspect of Arizona's history, so primary source materials had to be located at the Arizona Geological Survey (which administers the oil and gas program in Arizona), the Arizona Corporation Commission, and in the newspapers of the period. These showed that all of the explorations began as ventures of companies organized in Arizona. These were small companies, organized for the purpose of drilling for and producing oil, by persons who had no previous experience in the business.

There are a few contemporary accounts of these early explorations. One reminiscence, about the well now known as Howle 1, said that

> In the summer of 1912, Perry Howie, on the recommendation of his geologist, T.F. Colton, drilled a well in the southeast corner of Graham county to a depth of 1100 feet. Under affidavit dated March 2nd, 1927, he says: 'We drilled through as I recall it, a sedimentary formation, lime, sandstone, shales, several oil sands and little if any quicksand. Below 750 feet we encountered several showings of oil and gas and the gas would burn. After myself and another had gone to bed, the well blew in, throwing oil and gas over the derrick and did so for nine days and nights, and eventually ruined the hole and sealed itself off. No effort was made to reopen the well.'[11]

A summary of wildcatting efforts mentioned the U.S. Oil Co. 1 well, completed in 1917:

> One of the first holes to be drilled was the U.S. well located north of Bowie about ten miles. They went down better than 1000 feet. They seemed to have had plenty of oil showings but eventually they quit work, pulled their casing and departed.[12]

Late in 1927, one of the boilers with the steam engine at a well being drilled near Pima, Az., exploded and scattered parts of the rig across the countryside. One worker received burns.[13]

The five years from 1927 through 1931 were a peak period of drilling activity and, to judge by the newspaper coverage and level of outside interest, amounted to a boom in oil exploration. What started this? The early and middle 1920's had witnessed one oil boom after another, as new fields were brought in in southern California and west Texas. Another factor was probably the recent oil discoveries in New Mexico: three fields in the Shiprock area adjoining Arizona brought into production between 1922 and 1925; discovery of the Artesia pool in Eddy County in 1924; and the drilling of Lea County's first successful oil well in 1926.[14] Other discoveries soon followed in these same areas.

Drillers in the northwestern corner of New Mexico had employed conventional wisdom and located, with good results, on anticlines or domes where crude oil had accumulated in traps. In Arizona, geologists made similar recommendations, while some test holes may have been drilled on the strength of oil and gas showings in water wells.[15] It is unlikely that testing followed a haphazard pattern, however, because drilling was expensive even then. One account of explorations mentioned several oil showings in water wells, and reports from Willcox, Az., as far back at 1912 told of gas breaking through water wells and destroying drilling rigs.[16] However, locations in the fields near Bowie, San Simon, and Pima, Az., seem to have been chosen by devices that, in the language of the times, amounted to "doodle-bug contraptions."

Geophysical methods of oil prospecting were known in the 1920's, and theoretical articles in the *Bulletin of the American Association of Petroleum Geologists* speak of gravity anomalies (measured with the torsion balance), magnetometers, and electrical methods of prospecting.[17] No references to these techniques in Arizona have been found. The most important factor was probably the opinions of geologists, and when the Whitlock Oil Co. commenced drilling on their Prospect No. 1 (the Whitlock Oil Co., State 1 well) north of Bowie, Az., on July 3, 1927, it was after 28 geologists and three geophysicists had reported favorably on the location chosen, in the San Simon Valley.

The company claimed that the start of drilling climaxed seven years of study, at a cost of $12,000 to $15,000 (the Whitlock Oil Co. was incorporated in September 1926).[18] Actually, according to another article, this location on a state land lease 14 miles north of Bowie, Az., was "where an extremely high reading was obtained recently with the Lind

oil detecting instrument."[19] The same device had also located the Bear Springs Oil & Gas Co., Pinal 1 well, about one-third mile north of the Whitlock prospect.[20]

Arizona newspapers in 1927-28 made a number of references to (a) the Lind oil-detecting instrument, (b) the Trumbull Oil-Detecting Instrument (or Oil and Gas Affinity Instrument), and (c) to an unnamed device invented by William A. Sharpe of the Colorado School of Mines. The latter was illustrated in *The Arizona Republican* for December 4, 1927, which showed a device that resembled a mortar shell suspended with point downward from a tripod, and a box with dials set up adjacent to the tripod. No explanation of its operation was given. Another article made reference to the Trumbull Seismograph, which was presumably the same as M.C. Trumbull's oil-affinity machine. Geologist Claude Palmer was satisfied "that the instrument had an affinity to petroliferous content."[21]

The only account of how any of these devices worked was given by one Wm. J. Vaughan, cited as the local manager of the Underwriters' Syndicate and superintendent of the well being drilled on the Mary E. Mack lease at Pima, Az.:

> There are two types of detectors. One reacts to the presence of oil and indicates volume. The other indicates only the depth at which oil may be struck. The first type may be described as an affinity instrument. It carries a reservoir of compound chemicals similar to those contained in petroleum. These chemicals are sympathetic to the vibrations sent out by electrons of the petroleum atoms and respond when the reservoir is suspended over a subterranean reservoir of oil. Amplifiers similar to those used in magnifying radio vibrations step up the sympathetic vibrations in the container until they can be mechanically indicated on a dial.[22]

Presumably all three detectors were of the first type and operated on similar principals(?). Whatever their merits, they did have a following, as all of the wells spudded in in 1927 seem to have relied on them, which includes another hole at Ashurst, Az., five miles west of the one at Pima, financed by a New York based syndicate. None of these ventures resulted in a production well.

Oil in northeastern Arizona has been produced from the Mississippian and Devonian formations of Paleozoic age, although shows have been reported from other geologic formations. In southeastern Arizona there are thick Paleozoic sections exposed in the mountains. Within the basins these same sections may be present, but the deep accumulation of Quaternary sand, gravel and other valley fill conceals the structure of the older rocks. The relative recency of the alluvial sediments accounts for why none of the wells in the San Simon Valley struck oil, and the wonder is why, with the geologic expertise they had available, companies would continue sinking wells, expecting to find commercial quantities of oil in these sands, shales and gravels.[23]

One of the small Arizona ventures was the Pinal Oil Co., organized February 3, 1927. The original amount of its capital stock was $20,000, later raised to $60,000, and in 1929 to $500,000. Of this, almost $150,000 was shown as paid up and issued. The Bear Springs Oil & Gas Co., organized in March 1926, had the same authorized amount of capital stock but showed only $11,874.50 paid up and issued in their 1929 annual report, with virtually no assets. The Whitlock Oil Co., chartered in September 1926, had an authorized capital of $100,000, but in their only annual report (June 1, 1927) listed $21,450 paid up and issued, with virtually the same amount as assets.[24] That month they did receive permission to sell an additional 150,000 shares of stock at $1 per share.[25]

All of these local operations were undercapitalized and some were bought out by interests from Utah, California, and New York. The infusions of new money allowed drilling to resume (sporadically), at some wells, but even so, none of these ventures resulted in a producing oil or gas well. With the companies that remained under strictly local control - the Whitlock Oil Co., Bear Springs Oil & Gas Co., and Pinal Oil Co. - activity at their initial well sites effectively halted in 1928. Whitlock did drill a second well, a dry hole, completed in 1930.

From the reportage in the newspapers, it appears that only rarely would a company drill more than a single well at a time. This

reflects the strains on financing. If, as sometimes happened, there was said to be eight or nine wells active, this meant almost the same number of companies involved. All of these endeavors seem to have been legitimate efforts to find oil. Noticeably absent from the newspapers were large display advertisements that solicited readers to buy oil stocks, as happened with an oil 'boom' in the Tularosa Basin of southern New Mexico in 1919-1920. Such advertisements were plays to fleece investors rather than honest efforts to finance the discovery of oil. By way of contrast, in Arizona the claim was made as late as 1931 that "Pinal Oil Co. is fully financed and .... all negotiations for purchase of that company's stock are cancelled."[26]

Through the period of the 1927-1931 oil 'boom,' the names of companies, investors, and oil wells came and went in southeastern Arizona, but one name, that of Bob Thomas, was consistently present. He was initially shown as statutory agent for both the Bear Springs Oil & Gas Co. and the Whitlock Oil Co., and was one of the incorporators for the Whitlock company. In December 1927 he was listed as a geologist with the Whitlock firm.[27] Thereafter, through 1931, he was usually shown as business agent for the Bear Springs Oil & Gas Co., even when the activity of that organization was clearly waning. He may have been the person most responsible for keeping alive an expectation that there was oil somewhere beneath the surface in southeastern Arizona, even when test after test yielded only showings or dry holes.

As testimony of his optimism, on May 10, 1932, he filed a Homestead Entry on 320 acres in Section 25, T10S R28E, a tract that included the old Bear Springs Oil & Gas Co., Pinal 1 hole spudded in early in 1927. He was only 59 years old when he made the entry, but on November 2d of the same year he died. No residence had yet been established and there had been no cultivation. In 1938 the entry was cancelled.[28] His death, at the depth of the Depression, probably signaled the close of oil exploration in southeastern Arizona for a generation.

Hope springs eternal in the realm of mineral exploration as elsewhere, and the discovery of several large oil and gas fields in rock beneath Laramide-age thrust sheets in Utah and Wyoming stimulated leasing and the drilling of nine exploratory wells in Arizona in 1980-1982, to test the theory that the Laramide overthrust belt extended across Arizona. Eight holes lay within the Basin and Range province. One well, Phillips Safford A1 State, in the San Simon Valley, reached a depth of 8,509 feet in upper Tertiary conglomerate. As with the other tests, no oil or gas was discovered.[29]

THE TWO WELLS

Drilling sites for abandoned oil and gas wells are not difficult to identify. The principal means for doing so in Arizona is USGS *Oil & Gas Investigations Map OM-201.*[30] This map specifies the locations for most tests to a ¼-¼ section. Until the early 1950's, the drillers' debris was simply left at the site and not cleaned up or buried. The amount of material can be substantial, and extend across 100 meters or more. Well locations were apparently not identified by distances to the two nearest section lines until after World War II, nor were the names or locations of abandoned wells welded onto the casing or an attached plate until then.

Exploratory wells are normally not close together and can easily be distinguished from one another with only ¼-¼ locations. In T10S R28E, there were only four tests in the entire township. Two of these, at sites AZ:CC:7:54 and AZ:CC:7:57, are the principal subjects of this report. Another one, the U.S. Oil Co. 1 site in the NW¼, NE¼, Section 35, was visited but has not yet been recorded. The fourth location, J.C. Clark 1, lies near the south line of the township in Section 32 and has not been revisited.

The documentary record relating to an oil well, particularly newspaper accounts, is typically most complete from the time drilling began until the discovery of oil, if any was found. Publicity was a good way to encourage new investors. However, the course of drilling often met with interruptions, as when waiting for the arrival of more casing, coping with equipment breakdowns, or

shutting down when the sponsor ran out of money. If one company quit, another one might buy out its interest and resume drilling. News releases often announced plans that were never realized.

As a result, one can usually say when drilling commenced, but it may not be known how long this continued or when delays were met if the only result was a dry hole. At most such wells, the span of genuine activity was probably rather brief, measured in months rather than in years. A 1931 newspaper article said that the wells at what are now sites AZ:CC:7:54 and AZ:CC:7:57 had been practically shut down for the past three years (i.e., since 1928), although another article a few months earlier gave the impression that there was substantial activity at both sites.[31] The completion dates listed in *Oil & Gas Investigations Map OM-201* are good estimates, but they may not be a reliable guide as to when drilling began, or account for later activity. Information must be drawn from every type of surviving record.

AZ:CC:7:54 (ASM)

This well was drilled by the Whitlock Oil Company as their Prospect No. 1, on lands then owned by the State of Arizona, in Section 36, T10S R28E, in southern Graham County. This company's Articles of Incorporation were filed September 8, 1926, with Temple F. Penrod of Phoenix, described in one account as a "well known auto accessory salesman," as the president and Bob Thomas, then of Globe, Az., as statutory agent.[32] One of the incorporators, Boyd Victor Lind of Yuma, Az., was promoting or perhaps had invented the Lind oil-detecting instrument, mentioned earlier.

The company's officers spent at least part of the time until the following April in raising capital. The prospecting must have been done already. In April, the company president announced that they had no stock on the market and "our company is completely financed."[33] This was probably premature, as the company was still raising money in May. By June, according to the only Annual Report on file, they held oil and gas leases on Section 36, T10S R28E (State of Arizona lands) and on seven sections of Federal lands in the southwestern part of T10S R29E, all in the southern part of Graham County.[34] According to BLM records, oil and gas lease PHX 060054 issued on February 19, 1927 covered Section 20, T10S R29E. The only oil and gas lease on record for Section 36 (A 22456), however, ws issued by the State of Arizona on February 24, 1984.[35]

Although the news item on April 8th said that "The contract for drilling the (Whitlock) company's first well was awarded last week and drilling apparatus is already on the ground," it would appear that the company drilled its own well. No mention was made of a drilling subcontractor in any subsequent reports. It would have been unusual not to subcontract the drillling, especially for a company with no prior experience in the field. Perhaps the Whitlock crew shared members and even equipment with the Bear Springs Oil & Gas Co. well already being drilled by the Pinal Oil Co. just one-third of a mile to the north. The Whitlock Oil Co. and Bear Springs Oil & Gas Co. did share Directors and Officers to some extent, with Temple Penrod being one of the Directors of the Bear Springs company and Leroy Kennedy serving both as President of the Bear Springs Oil & Gas Co. and Secretary of the Whitlock Oil Co. Another individual served simultaneously as Vice-President of one company and Treasurer of the other.[36] One photograph of the Whitlock No. 1 well shows a crew of five men plus a young girl, probably the cook[37]

Drilling on the Whitlock Prospect No. 1 finally began July 3, 1927. The well was drilled entirely with a cable-tool drilling rig, as both the Canfield report from 1928 and a contemporary newspaper article make clear.[38] Whether this was powered by steam or by a gasoline engine is not known, but an early progress report stated that the well had struck water at 150 feet and drilling was suspended until the completion of a water well nearby.[39] This implies the possible use of a steam engine. However, two articles from 1931 mention an 80-horsepower Buffalo Gasoline engine and a National No. 2 drilling machine, owned by the Whitlock Oil Co., at their Well No. 1.[40] It may be that the drilling rig was replaced at some point; one photograph in 1927 shows what appears to be a simplified drill rig with a small derrick (for the water

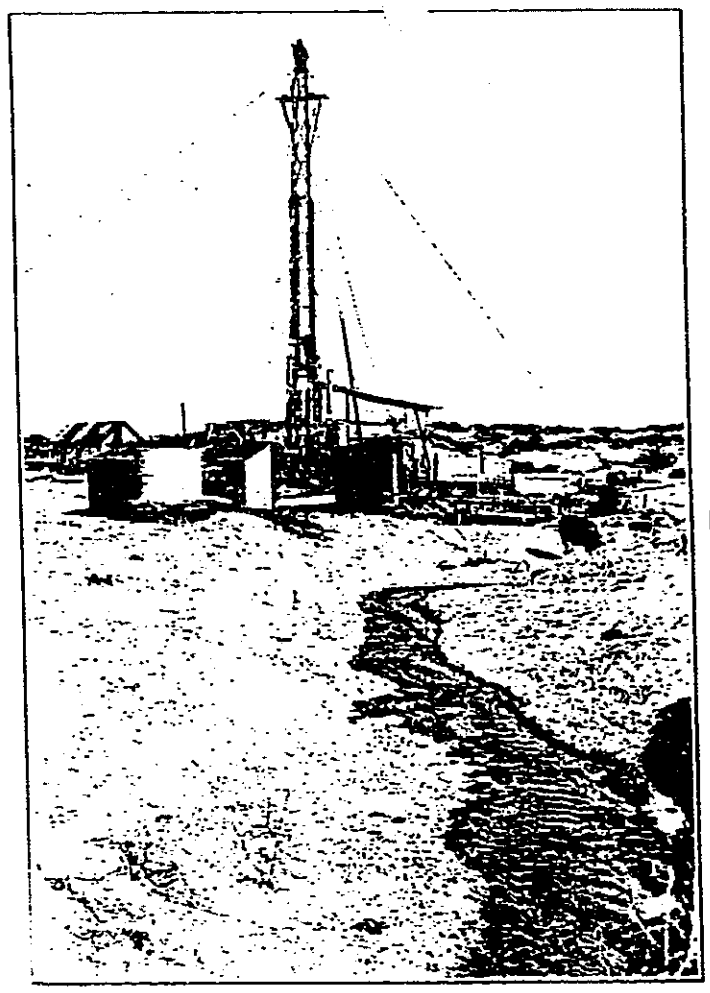


Fig. 4. "A Flow of Warm Water from Pinal Oil Co's Whitlock No. 1 Well" (Whitlock Oil Co., State 1 well). From USGS Water- Supply Paper 796-F (1938).

well(?) adjacent, a single roofed shelter, and four small cabins that comprised the Whitlock camp.[41] An undated but later photograph shows a somewhat more elaborate derrick guyed up by cables, probably a portable rig, with several small sheds, a roofed shelter and at least one of the small camp buildings (Fig. 4). The rigs in the two views are not the same equipment. The power source is not obvious in either scene.

No new progress reports were published until the end of August, when the well had been drilled below 1200 ft.[42] One month later, it was reported that drilling had been shut down for more than 15 days, pending the arrival of casing. The drill had reached 1325 ft., "and quite a bit of gas and some oil has been encountered."[43] In October, drilling was again suspended, awaiting another shipment of casing.[44] Early in November it was shut down once more, preparatory of making a water shut-off.[45]

Finally, in its November 25, 1927 issue, the *Graham County Guardian* announced that the Whitlock Oil Co. had struck "Sand containing a heavy saturation of oil" at a depth of 1400 ft. Significantly, "A heavy flow of water was encountered with the new sand."[46] Reporting on this well then virtually ceased in the Safford paper, except for allusions to attempts to secure a water shut-off and an enigmatic statement the next April that "satisfactory progress is being made."[47]

Outside of Bowie and Safford, a somewhat different story was told. *The Arizona Republican* in Phoenix and the *Arizona Record* in Globe carried major stories on the discovery of oil inArizona in their December 4, 1927, issues. An unnamed Tucson paper printed the same story on December 5th. The well "came in" on November 9th, "and is said to have been in good quantities." The estimate of production was 1,000 to 7,000 barrels of oil per day. Company officials said that no announcement was made at the time in order to allow them to secure leases on other acreage in the vicinity. Mr. Penrod added that arrangements had been made with Los Angeles banks to finance the Whitlock Co. "until arrangements for delivery of the oil are completed." Apparently the company had expended its capital and was now reduced to borrowing.[48]

Although the level with the oil sand had been plugged for the time being, a careful

reader would see that there was a serious problem with water. The same December 4th article in *The Arizona Republican* went on to say that

> Oil has been flowing with the water over both slush pits at the well and through the ditches as far as three-quarters of a mile across the desert. A vast earthen dam has been constructed at some distance from the well, and as soon as the cementing off process is completed, oil will be permitted to flow out into this huge reservoir until tank or pipe line construction can be completed, Mr. Penrod said.

Officials of the Whitlock company "freely predicted" that "Whitlock No. 1 had written the first line of a new chapter in Arizona's history." This 'reservoir' may still be seen on the USGS Javelina Peak 7.5' topo map (Fig. 3).

The log on file at the Arizona Geological Survey shows the Whitlock Oil Co., State 1 well as drilled to 1837 ft., while the USGS lists total depth as 1921 ft. No explanation was made as to why drilling continued several hundred feet below the oil sand, which one report said was encountered at 1427 ft.[49] Perhaps another showing was discovered, as a 1931 article said that this well would be plugged from 1920 ft. back to 1500 ft. "in order to protect the green oil sand that was encountered between 1600 and 1700 ft. from infiltration of water."[50] A later report also mentioned that this well hit two flows of water, that flowed under artesian conditions and discharged an estimated 500,000 gallons per day.[51] The flows were apparently brought under some control, but the drillers were not able to effect a water shut-off, which effectively doomed any further development.[52] The company was reorganized in the spring of 1929.

Temple Penrod and Charles Button, the field supervisor, left the Whitlock company and, with his California connections providing the financing, began drilling the Ryan and others Ryan 1 well 7½ miles southwest of San Simon in June 1930. This reached 990 ft. and proved to be another dry hole.[53] As for the equipment at the Whitlock Oil Co., State 1 well site, this was moved off in June of 1931.[54] Section 36 became Federal property through a land exchange with the State of Ariona in 1989.

When site AZ:CC:7:54 was initially recorded in July of 1992, the site survey sketch showed a rectangular, concrete enclosure dating from the 1970's around the well head, with a rectangular bathing tub attached. Since 1992, the original surface has been completely altered in the vicinity of the well head. BLM engineers also removed the concrete enclosures and dug down along the old casing to a depth of ten feet, until they encountered sound metal. They then installed a new length of casing, with a control valve at the top.[55] The area saw two outdoor hot tubs and a wading pool installed, as well as sanitary facilities, the result being the attractive Hot Well Dunes Recreational Area that opened to the public in 1996 (Figs. 5-7).

There appear to be no features remaining in place from the period of the Whitlock Oil Co., 1927-1931, except for the well itself, with its new casing and control head. The cabins were probably mounted on skids and removed when no longer needed here. Even refuse is absent, perhaps in consequence of the recent landscaping. Alongside the road that leads in to the recreational area, however, are two assemblies that are evidently part of the equipment used to drill this well. To identify these, a number of sources were consulted for descriptions of early drilling equipment, but very little was learned. A good account of cable-tool drilling procedure was found,[56] as well as two pictorial histories of the early oil industry,[57] but the latter included few close-up views of equipment.

One assembly at the site (Fig. 8) was a 7 ft. diameter bull wheel mounted at one end of a shaft 13½ ft. in length. Part of the 16 inch diameter shaft was a cylinder upon which two 3 ft. diameter flanges had been mounted, as anchors for the wire cable that was wound on the spool between the flanges, and alternately released and taken up to raise and lower the tool bit whose pounding created the drill hole.[58] Markings on this assembly were almost unreadable because of corrosion, but included the words SPOOLING FLANGE .... BULL WHEEL .... as well as the initials NS CO within a shield.. This had

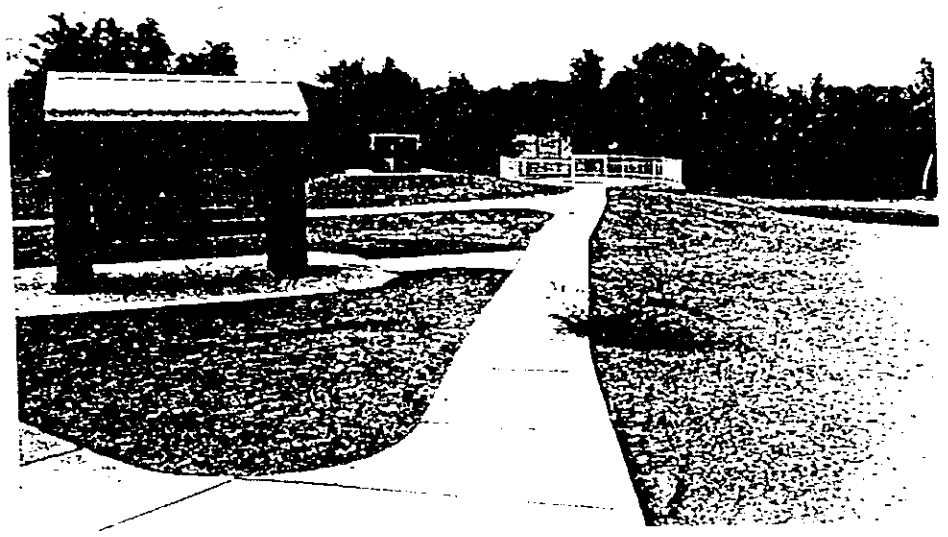


Fig. 5. Site Az:CC:7:54 (ASM) (Whitlock Oil Co., State 1). Overall view of Hot Well Dunes Recreational Area with interpretive panel, well head, hot tub, and wading pool. Bearing 175°. July 1996.

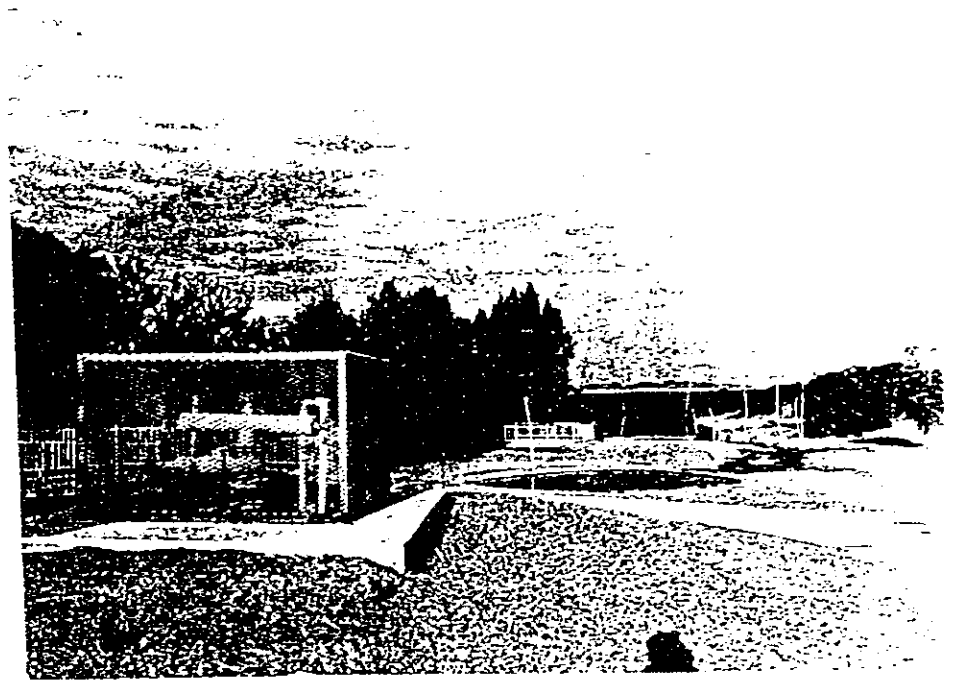
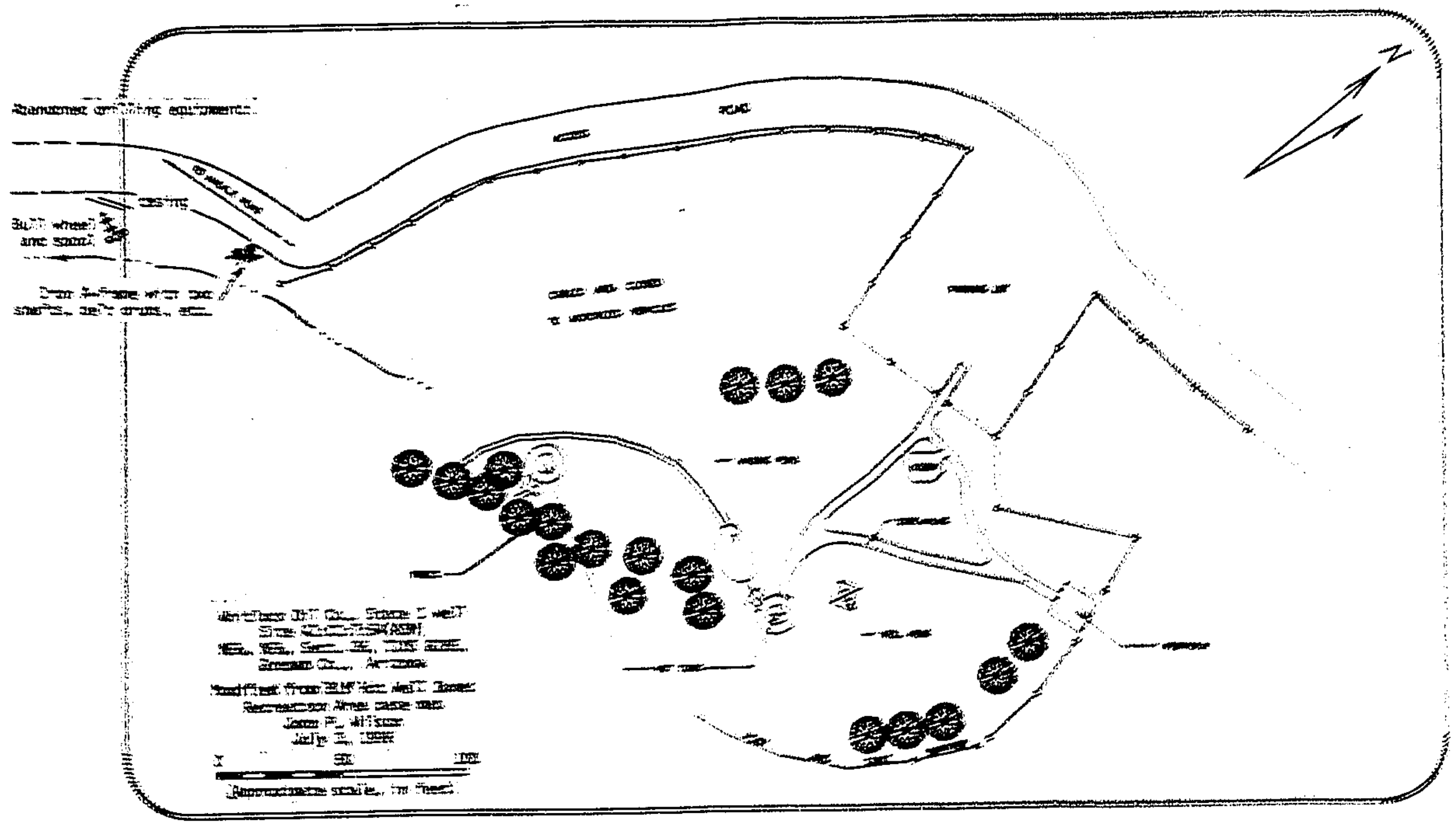


Fig. 6. Site AZ:CC:7:54 (ASM) (Whitlock Oil Co., State 1). Well head for former Whitlock Oil Co. well in the foreground; wading pool and partial view of two hot tubs, with runoff. Bearing 250°. July 1996.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ROAD

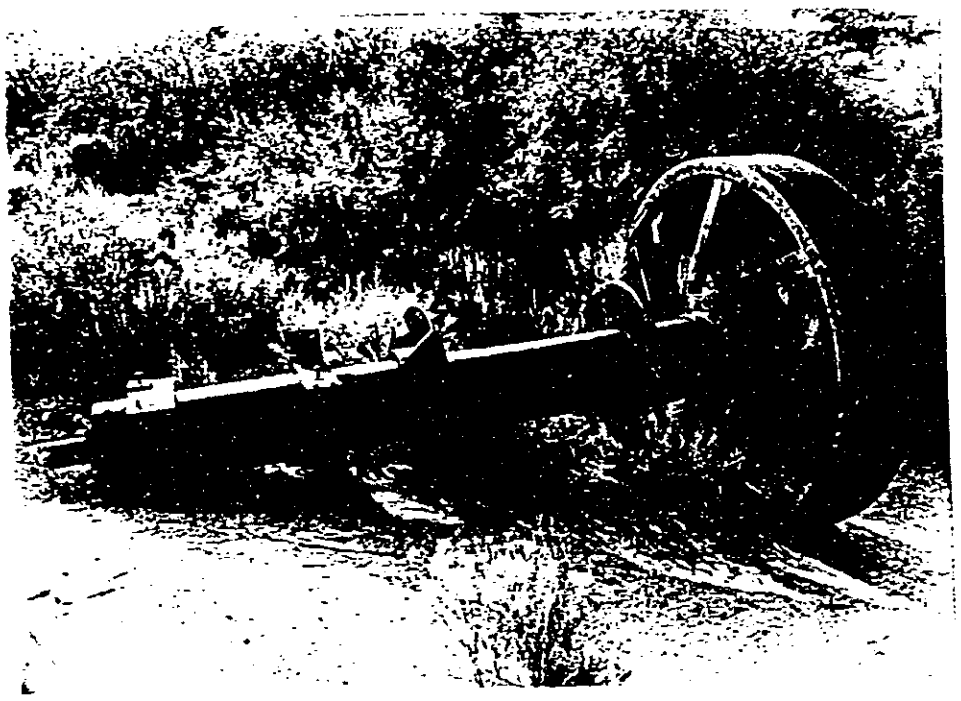


Fig. 8. Site AZ:CC:7:54 (ASM) (Whitlock Oil Co., State 1). 7 ft. diameter bullwheel and spool assembly, including spooling flanges, from original oil drilling rig. July 1996.

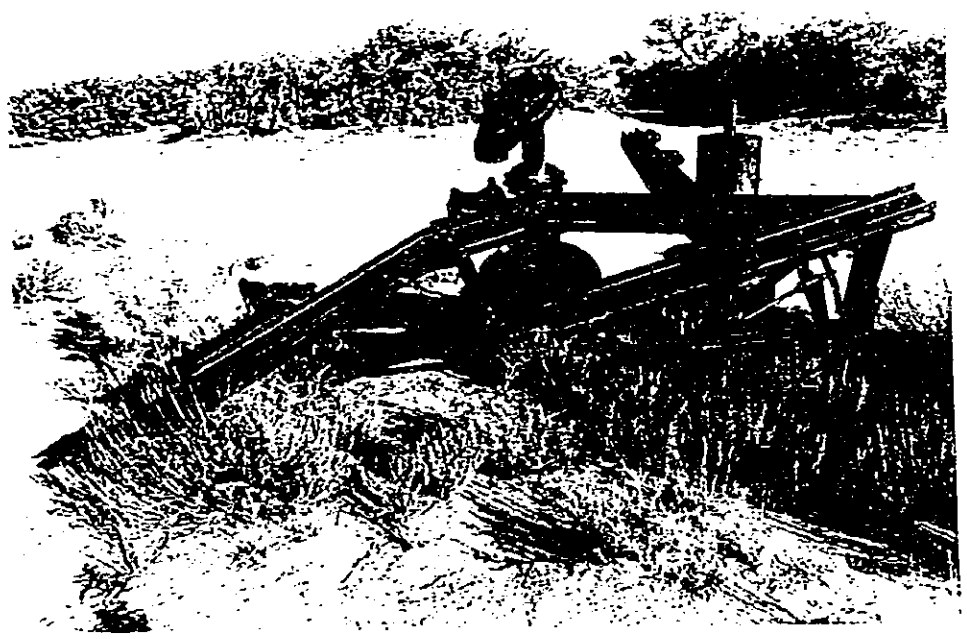


Fig. 9. Site AZ:CC:7:54 (ASM) (Whitlock Oil Co., State 1). A-frame assembly of channel iron with eccentric arm, chain sprocket, belt drums, from original oil drilling rig. July 1996.

obviously been part of a cable-tool drilling rig, but not the original one, which had bull wheels approximately 10 ft. in diameter.[59]

The other assembly was a flattened A-frame made of channel iron, welded and bolted together, upon which two shafts (both present) had been mounted (Fig. 9). The length of this frame was 12 ft., and the height to the center of the bearing shown in the photograph was 3 ft. 2 inches. The eccentric arm mounted on one shaft lies outside the frame, while the sprocket for a chain drive and two 30 in. diameter disks were mounted inside the frame. The second shaft had two wheels or spools for belt drives, one 14 inches in diameter and the other 24 inches in diameter. Cast-in markings consisted of N S CO U.S.A. and HK 12. This assembly seems to have been part of a cable-tool drilling rig, by virtue of the eccentric arm. Why these two assemblies were left at the site is not known, unless they had broken down in service and were considered not repairable. These, and the well itself, are all that remain from the original Whitlock Oil Co., State 1 wildcat oil well.

AZ:CC:7:57 (ASM)

The story of this well parallels that of the first one, but involves two companies: the Bear Springs Oil & Gas Co., which was the oil exploration company, and the Pinal Oil Co., which did the drilling. The actual holder of the oil and gas permit (Phoenix 058484) was Charles H. Allen of Globe, Az., hence the name Bear Springs Oil & Gas Co., Allen 2 (Pinal 1) assigned to this well. This lease was issued January 13, 1926, and cancelled February 7, 1935.[60]

The Bear Springs Oil & Gas Co., incorporated on April 3, 1926, was established to drill for, produce, develop and otherwise produce and deal in oil, and to engage in any and all kinds of business in which natural persons could legally engage, etc., etc. As noted, two of its officers were also officers in the Whitlock Oil Co., organized later in 1926, and Bob Thomas was the statutory agent for both firms. The Bear Springs Co. had few assets and relatively little capital at any time; their Annual Report in 1926 listed $910.92 in assets and $1898 as the amount of capital stock paid up and issued. From this point until the last Annual Report was filed in 1931, their assets decreased with each filing, to $2.08 in 1931, and the amount of paid-up stock increased, to $12,423.50 in the same year.[61]

The historical background on the Pinal Oil Co. is both more complex and more confusing. Incorporated on February 3, 1927, its principal place of business shifted from Phoenix to Superior and then to Tucson, Az., over three years. The incorporators, directors and officers were largely the same individuals in the first two years. The president, C.H. Bouton, most recently had owned and operated a motor freight line in central Arizona. The only person with experience in oil seems to have been William Crawford, described as driller and field manager, who was one of the incorporators but not a director. He was replaced as head of field operations by Mr. Bouton on August 1, 1928.[62]

The Pinal Oil Co. had been organized specifically to drill for oil and gas, acquire leases and build pipelines. Originally capitalized at $20,000, none of the officers or directors held office in either the Whitlock or Bear Springs firms. The company prospered initially, at least in the eyes of investors, because in July 1927 the stockholders authorized a 150-for-1 split with each of the 60,000 new shares having a par value of $1, in effect a tripling of their value since February. A new class of preferred stock was authorized, but whether any shares were issued is undetermined.

Sometime between the summer of 1928 and February 1929 a completely new set of officers assumed control of the company. This was followed by the issuance of new shares and more than doubling of the company's capitalization. As for assets, the 1929 and 1930 Annual Reports showed that the Pinal Oil Co. owned an old well-drilling outfit, cable tools, a tractor, tank(?) and, curiously, a 1500 ft. well valued at more than $13,000 in 1929. Drilling rights included four specific sections, including Section 25, in T10S R28E, and, at various times between 1928 and 1930, up to 16 additional sections in southern Graham County.[63] *The San Simon Valley Oil News* for November 2, 1928, carried an informative profile of the Pinal Oil Co. So far as can be determined, this company drilled

only one well.

The drilling crew spudded in the Bear Springs Oil & Gas Co., Pinal 1 well some time in early March, 1927, and by mid-month had penetrated to 300 ft.[64] Three weeks later they had drilled to 500 ft. The first big news was that gas pressure had forced quicksand almost to the top of the hole, and "big oil showings have been obtained by bailers" while "the slush pit is said to be covered with oil."[65] The driller, Willliam Crawford, was faced with drilling and casing a new well. A month later, more than 300 ft. of casing had been installed.[66]

Progress was slow. In mid-July it was announced that the Keystone rig, with which the well had been spudded in and drilled to a depth of more than 600 ft., was being moved to another location held by the Bear Springs Oil & Gas Co.[67] Apparently it did not leave the site, but during August was shifted to a location nearby to drill a water well that would supply a 60 horsepower steam boiler and engine that would power a replacement for the Keystone drilling rig. By implication, the latter may also have been steam-powered.[68]

The afternoon of August 17th brought a serious delay, when a high wind "of tornado proportions" demolished the Pinal Oil Co.'s derrick and blew over the bunk houses.[69] Three weeks later a new derrick had been completed and another cable-tool rig, a No. 28 Star drilling machine, was reportedly in place with casing set and drilling scheduled to be resumed the next week.[70] This replacement equipment was described later as an old No. 7 Star rig, used previously to drill the State of Ariz. 1 well at San Simon, spudded in in December 1923.[71]

The crew "plugged along steadily," as a later report put it, and the hole reached 800 ft. in October.[72] Announcements were made in September and again in December that the Bear Springs Co. had signed new drilling contracts, although no one but the Pinal Oil Co. worked at the Bear Springs Oil &Gas Co., Pinal 1 location.[73] By mid-December the well was down to 1100 ft., with no more claims of oil or gas, and it had been overshadowed for the moment by the claims for the Whitlock Oil Co., State 1 well just to the south.[74] No news followed for the next seven months, which suggests that drilling was shut down.

After C.H. Bouton, the Pinal Oil Co.'s president, took over as drilling supervisor on August 1, 1928, rapid progress was reported with another 400 feet of hole through hard shale and conglomerate to a total depth of 1515 feet. Mrs. Bouton said that she lived at the well for fifteen months; cooking for the drilling crew, keeping records of their time, a well log, records of the footage made and casing set, making the ovemment reports and doing the company's correspondence.[75] Mr. Bouton at this time was trying to effect a cement water shut-off at about 1450 ft., in expectation that the hole would soon strike an oil sand. The shut-off may have been effected, but by March 1929 the well was no deeper.[76] The reported depth as of 1931 was 1552 ft.[77]

The new officers of the Pinal Oil Co. did not resume drilling, and the well evidently remained shut down after 1928. In June 1931 it was reported that the National No. 2 drilling machine and 80 horsepower Buffalo gasoline engine were being repaired at the Whitlock Oil Co., State 1 site and would be moved 1700 ft. north to the Pinal No. 1 well. G.E. Parsons was field manager with the Lantz Securities Syndicate of Prescott as fiscal agent for the Pinal company, which suggests that the latter was in receivership. Two months later the field superintendent, Sam Twentier, was said to be hard at work getting the camps in shape with a crew of three.[78] Apparently nothing came of these efforts and the well itself produced only the early showings of oil and gas.

In Bob Thomas' homestead case file from May of 1932, there is what is called a water-hole affidavit, which affirmed that his entry had no spring, waterhole, hot springs or other body of water. It did have a water well and the Pinal No. 1 oil well 1552 ft. deep with water in it. Thomas claimed that the Pinal No. 1 well was then flowing about 5 gallons of water a minute.[79] As of 1938, the U.S. Geological Survey reported that this well discharged a "2-inch pipe full" of lukewarm water.[80] There is no flow at present and there probably has been none in the recent past.

The site survey record of AZ:CC:7:57

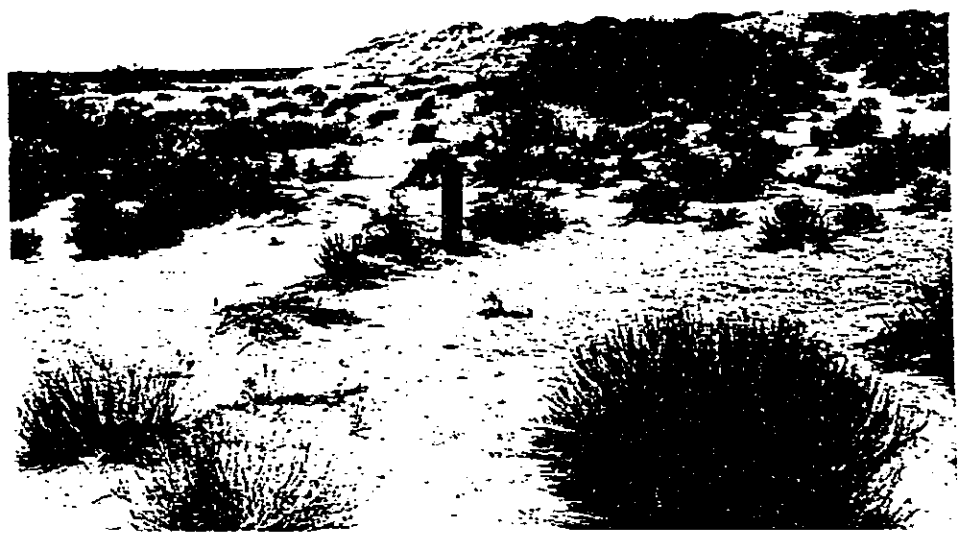
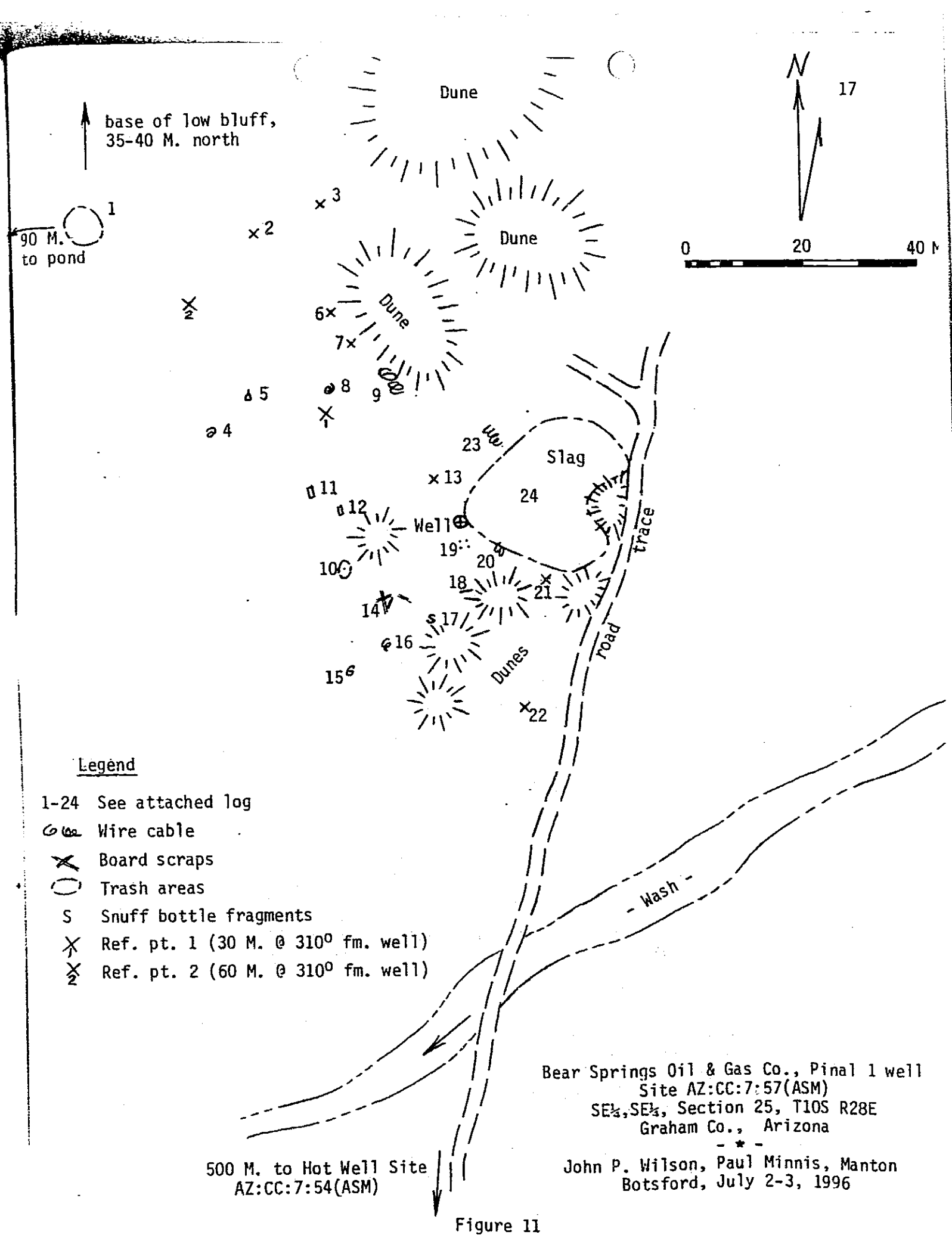


Fig. 10. Site AZ:CC:7:57 (ASM) (Bear Springs Oil & Gas Co. Allen 2 (Pinal 1) well). View of old well head (casing), with west end of coal clinker area on the right. Bearing 330°. July 1996.

made in July 1992 described this as a historic trash dump, probably debris from a Pinal Oil Co. camp in the vicinity. When revisited on July 1, 1996, the first thing seen was the old well casing, 8½ inches in diameter and now corroded, projecting about one meter above the ground surface (Fig. 10). The top of the casing is open and no identification or location was found welded on the side. The surrounding area is undisturbed except for a couple of tracks created by off-road vehicles. About 170 meters to the northwest is a pond, created by a dike or berm across a drainageway, that currently holds water (Fig. 3). It is uncertain whether this pond may have been built in association with the oil drilling activities or is of more recent origin. Numerous mesquite-capped sand dunes are present within and around the site area.

Adjoining the well head to the east is an area of about 400 M^2 covered with small fragments of coal clinker, some slag, and occasional firebrick fragments. This would have been the location of the boiler and steam engine used for powering the drill rig, and probably for the blacksmithing operation to keep the tool bits dressed. Nothing structural was seen there. Spaced three to four meters south of the casing, however, were four anchor bolts, 1.1 M. apart from east to west and 1.4 to 1.6 M. between north and south. What type of feature these anchored down is not known (Fig. 11).

Elsewhere around the well head, to distances of about 60 M. to the north, 40 M. west, and 30 M. south, were scattered fragments of (primarily) container glass and corroded metal artifacts. These included strands of wire cable 5/8 in. to 1 in. in diameter, frayed at the ends; some heavy-gage sheet metal, a few tin cans, a single-width cot or bedspring, a small oil can, at least one iron ring for protecting the threads on a length of casing, and four board scraps. Also present were several fragmentary dinner and salad plates, of both thin and heavy bodied white earthenware, and a small yellowware crock. Container glass (all fragmentary) included two snuff bottles, a GEBHARDT EAGLE CHILI POWDER panel bottle, the base of a mustard jar embossed DESIGN PATENTED AUG. 5th 1919, a tumbler base with a Capstan Glass Co. (1918-1937) trademark, and an H.J. Heinz bottle base with an Owens



Legend

1-24 See attached log

Wire cable

Board scraps

Trash areas

S Snuff bottle fragments

Ref. pt. 1 (30 M. @ 310° fm. well)

Ref. pt. 2 (60 M. @ 310° fm. well)

Bear Springs Oil & Gas Co., Pinal 1 well
Site AZ:CC:7:57(ASM)
SE¼,SE¼, Section 25, T10S R28E
Graham Co., Arizona

- * -

John P. Wilson, Paul Minnis, Manton
Botsford, July 2-3, 1996

Figure 11

Bottle Co. date-mark for 1930. Numerous other glass container fragments were mostly undiagnostic. No recognizable parts of a drilling rig, steam engine, or boiler remained here, and all corroded metal scraps except for some of the cable lengths and the bedspring were quite small.

Eighty meters northwest of the well casing lay a small trash area about six meters across, within which were found many of the ceramics and container glass fragments inventoried for this site. This plus the locations of the boards and bedspring suggested that the camp buildings, probably small, wood-frame cabins mounted on skids, lay to the west and northwest of the well - somewhere between it and the trash area. There are no known historical photographs of the Bear Springs Oil & Gas Co., Pinal 1 well and camp, but in appearance it probably differed little from the Whitlock Oil Co. camp (Fig. 4).

A complete new site survey record of site AZ:CC;7:57 included a scaled sketch map to indicate the locations of the features and the numerous piece-plotted artifacts (located by compass bearings and taped distances relative to the well head; see Fig. 11), and a detailed listing of these artifacts. Several photographs were taken as well (Fig. 10). Mr. Manton Botsford determined the site location by a GPS instrument. Arizona State Museum site survey forms were completed for both AZ:CC:7:57 and AZ:CC:7:54. One piece of flagging was tied to a yucca at AZ:CC:7:57, with the two sites otherwise left unmarked.

CONCLUSIONS

With time and resources, similar histories might be constructed for many of the other oil wells, all of them ultimately unsuccessful, drilled in what were being called the Willcox, San Simon, and Bowie fields during the late 1920's. A newspaper article in April 1927 claimed that nine drilling rigs were in operation that month in the Bowie field, which may be a high number and would have included all of southeastern Arizona.[81]

In later months, wells would frequently be shut down for various reasons while new operations would begin, so that several would be drilling at any given time. Some, such as the Whitlock No. 1, State 1, and Whitlock No. 2, Penrod 1 (the Badger Den well; see Fig. 3) continue in use as water wells, while the others are forgotten except for traces left on the landscape. The histories of all of these ventures would probably be similar to the two outlined in this report, differing in some details. While it is not recommended that historical backgrounds be developed for these other wells because of the disproportionate effort for the amount of new information, all of them should be recorded as thoroughly as any other archeological sites.

At the beginning of the summer, several research questions were proposed with respect to the historic sites in the Hot Well Dunes Archaeological Project Area.[82] Although all of the anticipated sources of information were utilized, it was soon seen that the questions were not well framed. The Whitlock No. 1 well location had been cleaned up entirely in the process of creating the Hot Well Dunes Recreational Area, which virtually eliminated the possibility of deriving any information from features or artifacts at that site. It was also seen that the possibility of distinguishing wells drilled with cable-tool rigs and those done with rotary rigs is slight to impossible, and indeed at some documented sites both types of rigs were employed.

All of the wells drilled in the 1927-1931 period were at least begun by small, Arizona-based companies, with little expertise and slim financing that disappeared rapidly in the face of the $80,000 to $100,000 reportedly expended on some wells. The geologic expertise that had led to the choice of drilling locations was dubious to say the least, and the principal result of these efforts is a chapter in Arizona's history now told for the first time.

ENDNOTES

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[3]Minnis and York 1993; Maxwell M. Knechtel, *Geology and Ground-Water Resources of the Valley of Gila River and San Simon Creek, Graham County, Arizona*, U.S. Geological Survey Water-Supply Paper 796-F (Washington, Government Printing Office; 1938).
[4] Thomas F. Stipp and Helen M. Beikman, *Map of Arizona Showing Oil, Gas, and Exploratory Wells, Pipelines, and Areas of Igneous and Metamorphic Rocks*, Oil and Gas Investigations Map OM-201 (Washington, U.S. Geological Survey; 1959).
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[11] *Graham County Guardian and Gila Valley Farmer* (hereafter abbreviated as *GCG*), August 5, 1927, p. 10.
[12] "Searching for Oil in Arizona," *The San Simon Valley Oil News* (Bowie, Az.), March 22, 1929, p. 1. The listed depth of this well is 900 feet. A visit to this site in 1996 showed plenty of evidence of an oil-drilling operation, but no trace of casing that would indicate the well location.
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[15] *GCG*, August 5, 1927, p. 10; Arizona Bureau of Mines (1969), p. 70.
[16] "Arizona May Assume Place As An Oil-Producing Area; Bowie Field Draws Interest," *The Arizona Republican* (Phoenix), April 8, 1927; "Searching for Oil in Arizona," *The San Simon Valley Oil News*, March 22, 1929, p. 1. The last claim probably refers to the Howle 1 well.
[17]See Arthur W. McCray and Frank W. Cole, *Oil Well Drilling Technology* (Norman, University of Oklahoma Press; 1959), pp. 22-40; also Beaton (1957), pp. 200-206.
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[25] "Will Sell Stock," *The Arizona Republican*, June 5, 1927.
[26] "Monthly Oil Review of Southeastern Arizona," *San Simon Valley Tribune*, June 19, 1931, p. 1.
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[40] *San Simon Valley Tribune*, June 19, 1931, p. 1; *Tombstone Epitaph*,September 3, 1931.
[41] *The Arizona Republican*, December 4, 1927.
[42] *GCG*, August 26, 1927, p. 2.
[43] *GCG. September 23. 1927, p. 1.*
[44] *GCG*, October 7, 1927, p. 10.
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[67] *GCG*, July 15, 1927, p. 4; September 9, 1927, p. 9.
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[78] *GCG*, June 19, 1931, p. 2; *San Simon Valley Tribune*, June 19, 1931, p. 1; *Tombstone Epitaph*, September 3, 1931.
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1109 Skyway
Las Cruces, New Mexico
88001-4016
July 27, 1996

Dear Mr.Rauzi:

I thought you might like to see a copy of the enclosed, which the Safford BLM sent over earlier this week. I included a full-size reproduction of the view of one of the assemblies at the Whitlock Oil Co. - State 1 site. What, properly, should I call this assembly? The BLM has cleaned up the site entirely, so that all that is left there is the well itself and the two assemblies by the side of the road. The other assembly is a 7-ft. diameter bull wheel on the same shaft as a spool that has a flange mounted at either end of the spool. At the well, the BLM dug down ten feet to find solid metal to attach a new piece of casing to, so that they could mount a valve at the top. I haven't picked up the photos that I took yet. The other photo, the one with me in it, shows the wellhead at the Bear Springs Oil & Gas -Pinal 1 well location. No water flowing there now.

Sincerely,

John P. Wilson

file
5-9

eology sites in the
ifacts of the past.
al pit house site.

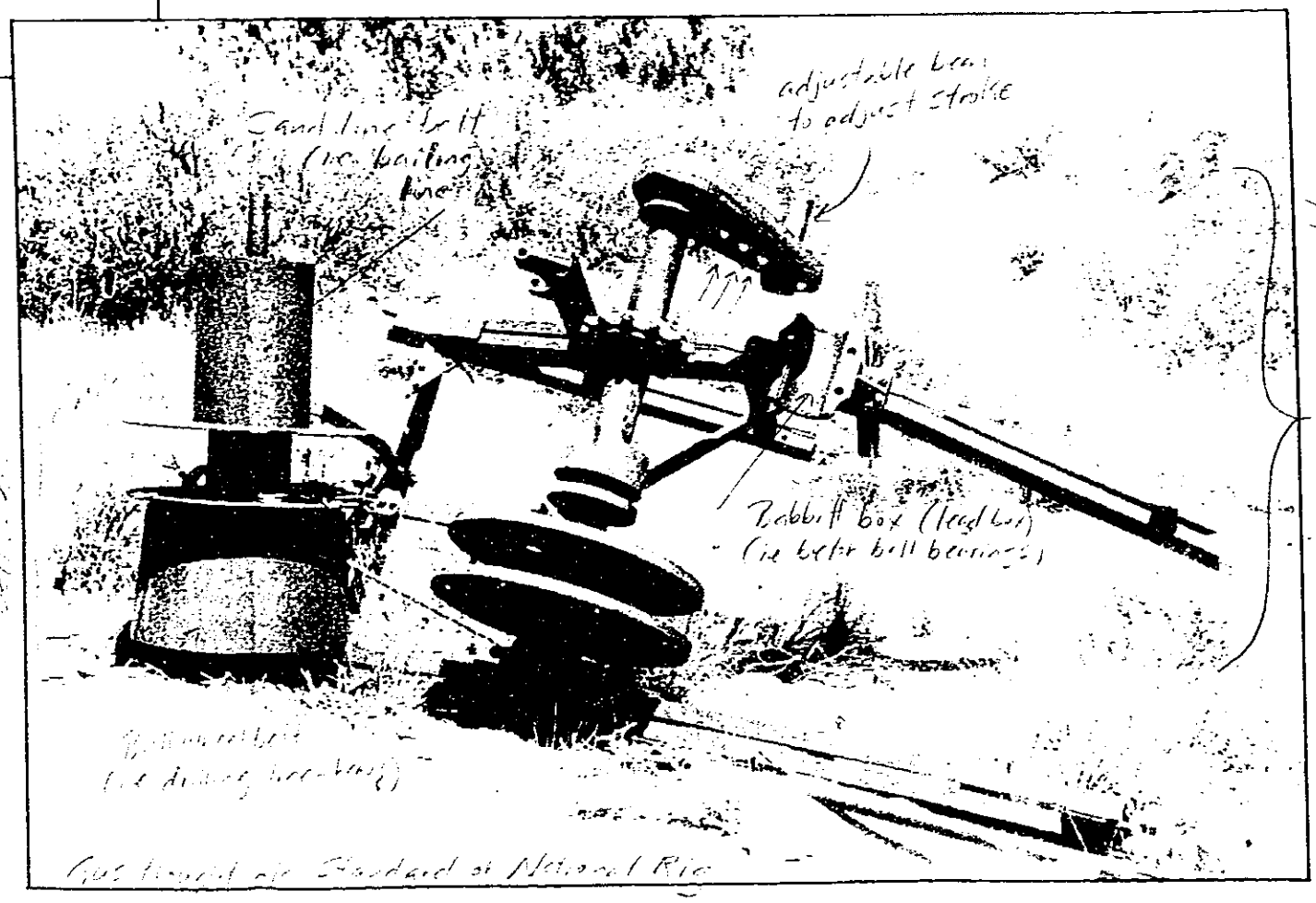
in the sand. That turned out to be a hearth area of the pi· ·se, leaching its color to the sur· ·.

Not only is it apparently in the "wrong place," but it is also the wrong shape for the people expected to be in the area. Only time and more study will determine who those people were; they were apparently using the area during either a time of drought and little food or for a seasonal camp. Large amounts of burned rabbit bone give some clue to how these people lived.

Other finds have included points (arrowheads) from a wide range of times and in a wide range of materials. Obsidian is found naturally in the area and small bits are found which have been chipped off during tool making.

An unusual "middle archaic" site has been found (from the 3,000-1,000 B.C. time frame) which will fill a missing gap of information from people who lived there before agriculture. These people were hunters and gatherers; fire rocks (cracked piles of stone

Dr. Pat Gilman looks over a core, all that is left after early people were through chipping away pieces for stone tools. This was one of the artifacts found from a 10 X 10 meter test area; other items found went into bags and bottles for safe keeping.

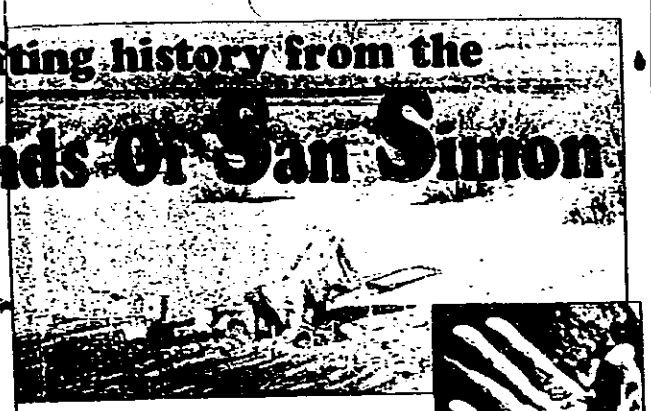


Drilling equipment left after a 1927 oil exploration project can be seen at the Hot Well Dunes Recreation Area southeast of Safford. The huge equipment was used by the Whitlock Oil Co. No oil was found but the hot water which resulted from the drilling operation has served to make quite a spa in the area to this day.

File 5-9

Eastern Arizona Courier
Safford
Wednesday
July 17, 1996

Sifting history from the Sands of San Simon



TOP: The inhospitable sand dunes of the San Simon make hard work of area archaeology. RIGHT: Roy Conner, area volunteer, holds a small archaic point found in the desert sands.
Photos by Toni Williams

Study sites yield clues to the past

By Toni Williams
Features Editor

A team of professional archaeologists and volunteers are again at work in the San Simon Valley east of Safford, searching out the history and prehistory of that desert area.

In the sand dunes, workers sift materials for bits and pieces of the life that was found there in times as far back as 3,000 to 1,000 B.C. And they are finding what they seek.

They are also finding some things they didn't expect to find.

Dr. Pat Gilman, with the University of Oklahoma, has been coming to this part of Arizona for a number of years. Her particular interest is the people who lived along the San Simon about 250-500 A.D. Their small dwelling sites abound up and down the valley.

One site, a pit house in a location where one has never before been found, is of particular interest to the researchers. It was sheer luck that a survey crew chanced upon this "needle in the haystack," by seeing a faint trace of discoloration in the sand. That turned out to be a hearth area of the pithouse, leaching its color to the surface.

Not only is it apparently in the "wrong place," but it is also the wrong shape for the people expected to be in the area. Only time and more study will determine who those people were; they were apparently using the area during either a time of drought and little food or for a seasonal camp. Large amounts of burned rabbit bone give some clue to how these people lived.

Other finds have included points (arrowheads) from a wide range of times and in a wide range of materials. Obsidian is found naturally in the area and small bits are found which have been chipped off during tool making.

An unusual "middle archaic" site has been found (from the 3,000-1,000 B.C. time frame) which will fill a missing gap of information from people who lived there before agriculture. These people were hunters and gatherers; fire rocks (cracked piles of stone from fire pits) and points have been found and are being studied.

Prehistoric sites, possibly even older, have yielded stone artifacts and other clues to the life of these very early residents of the area.

All together, notes Gilman, some 29 sites are being evaluated, mapped and the artifacts collected for further study in the laboratory. Working on the site during the six-week project are about a dozen assistants, not all there at one time. Several are local volunteers, who have worked with Gilman often during her visits to Arizona. More are students, some graduate assistants, from the Oklahoma university. A couple are working on their master's programs.

One, Bob Stokes, is on his first

See History Page 3B

TOP: Gene Riggs is a local volunteer who has worked on many archaeology sites in the area. Here, he sifts materials from a small excavation, seeking artifacts of the past. BELOW: Dr. Pat Gilman, left, watches as Bob Stokes checks an unusual pit house site.

Dr. Pat Gilman looks over a core, all that is left after early people were through chipping away pieces for stone tools. This was one of the artifacts found from a 10 X 10 meter test area; other items found went into bags and bottles for safe keeping.

Many seek 'black gold'

By Toni Williams
Features Editor

A part of the archaeology study on the San Simon is one not too many would think of as archaeology—but it really is. As part of the larger study, John Wilson, Ph.D. is investigating two interesting sites on the Hot Wells Dunes Recreation Area.

These are just a few of a larger number of oil drilling sites dating to about 1927, a part of the Bowie District where the search for "black gold" was then under way. His research has found reports of oil drilling from many years prior to that, as well as into the 1930s. The hope for riches from the desert sands has been a dream unwilling to die.

The work and the promotion of the oil wells seems to have been mostly speculation with some wild sales pitches thrown in, not an unusual occurrence of the time.

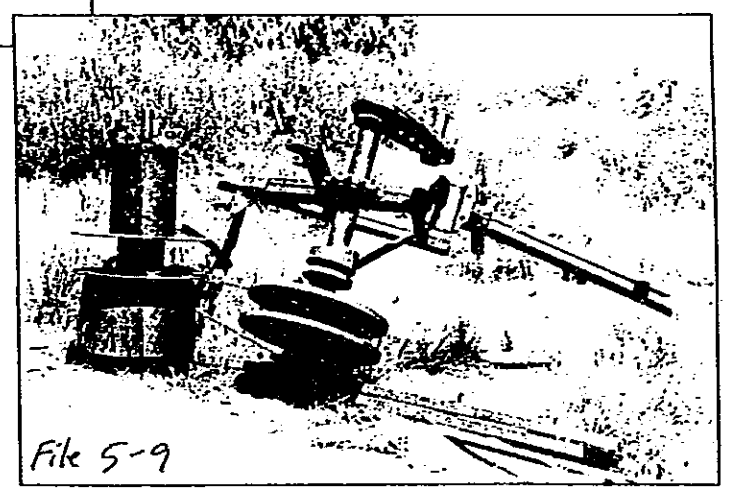
Wilson has found reports in papers of an "oil detection instrument" being used in the area. One report even shows a strange box-like machine with dials and knobs. "Probably a take off on some 'water witching' scheme," notes Wilson, who is a trained archaeologist turned historian and writer. He has questioned experts about the equipment and none are knowledgeable about any such workable tool; seismic soundings used today were unknown at that time.

He has been fascinated with the oil drilling project, having studied and written about many other facets of Southeastern Arizona's industries and natural resources.

At the two sites in his study, evidence of the oil drilling work still shows. Bear Springs Oil and Gas was at one of the sites, drilling to some 1,550 feet. Historical remains include wood from "drill cabins" and lots of burned coal from what he sees as blacksmith operations and from heating the boiler for the steam engines to run the drill.

The most dramatic evidence is

See Gold Page 3B



Drilling equipment left after a 1927 oil exploration project can be seen at the Hot Well Dunes Recreation Area southeast of Safford. The huge equipment was used by the Whitlock Oil Co. No oil was found but the hot water which resulted from the drilling operation has served to make quite a spa in the area to this day.

DRILLING REMAINS
BLM'S Manton Botsford, left, talks with Paul, one of the Oklahoma students, and John Wilson, who is studying the oil drilling operations of the 1920s at the Hot Wells Dunes area.

History

(Continued from Page 1B)

trip to the San Simon. He usually works with the Mimbres culture in New Mexico, but needed what Gilman describes as "desert experience," which he was certainly getting here. The crews start early to take advantage of what cool temperatures are available. Even so, the day the accompanying photos were taken, it reached 106 in the shade, and there wasn't any shade.

Stokes was leading the work at the pit house excavation, hopeful that the unusual find will yield more clues to the people, possibly Mogollon, who were there. Unusually angled post holes, sloping sides to the pit house depression and other unique features provided plenty to ponder. Materials from the hearth may provide more clues while 800 A.D. ceramics offer some more puzzles to try and solve.

The study team is finding the work challenging and fascinating, as they try to learn more about the variety of cultures who have made this desolate place home, or "temporary home," over a long span of years.

Gold

(Continued from Page 1B)

that seen by all visitors to the Hot Wells Dunes area, as the skeletons of huge drilling equipment lies rusting in the desert sun. The immense wheels were part of the drill rig cable spool. The tall derrick was held in place by more large cables extending out to stabilize it.

This was the work of the Whitlock Oil Co., which reported "oil found" in 1927. In actuality, according to government reports, a trace of oil floated on the first large volume of hot water that erupted from the 1,922-foot hole. The water drained off a quarter-mile away, making a water impoundment which can still be seen.

Wilson's research information, when completed, will be used by the Bureau of Land Management, sponsor of the study, to provide interpretations to the public on these unusual efforts to gain wealth from Graham County soils.

July 16, 1996

Dear Mr. Rauzi;

Yes, the note in the Heritage Fund Highlights newsletter is in reference to the project I'm doing for the Safford BLM. Or I should say, it's in reference to the Whitlock Oil Co. - State 1 well. I was over there July 2-3 and recorded the Bear Springs Oil & Gas - Pinal 1 site, which is very much the way it was left, and the Whitlock - State 1 location, which is completely altered as a result of the new facilities. I took photos and will send you prints when they come back. We also saw the Whitlock - Penrod 1 site, converted to a windmill-powered water well for stock, and the U.S. Oil Co. 1 site, which was either uncased or had the casing pulled as no actual well location could be seen there. At Whitlock - State 1 there is a 7' dia. bullwheel with two spooling drums on the same shaft, and a low A-frame of channel iron on which two shafts were mounted. I recorded both sites on Arizona State Museum forms. Interesting trip; warm out there.

Sincerely, John Wilson

file 5-9

State of Arizona
Arizona Geological Survey
416 W. Congress, Suite 100
Tucson, Arizona 85701
(520) 770-3500

Fife Symington
Governor

Larry D. Fellows
Director and State Geologist

July 10, 1996

Mr. John P. Wilson
1109 Skyway
Las Cruces, New Mexico 88001-4016

Dear Mr. Wilson:

I thought of your work when I came across the enclosed note in the *Heritage Fund Highlights* about the Hot Wells Dunes Recreation Area. Is the 1928 oil drilling operation mentioned in this note the focus of your study?

In any event, I hope you had a good, fruitful trip to the field earlier this month, and that your research is coming along well.

Sincerely,

Steven L. Rauzi
Oil and Gas Program Administrator

Enclosure

ARIZONA GAME & FISH HERITAGE FUND
LOTTERY DOLLARS WORKING FOR WILDLIFE

HIGHLIGHTS

Vol. 4, No. 4 • 1996

Grants Result In Over $2.5 Million In Projects

The Arizona Game and Fish Department awarded 62 Heritage grants across the state totaling almost $1.2 million for projects which will result in over $2.5 million on-the-ground work.

"Overall we had 137 grant requests totaling over $3 million. The response demonstrates the immense need throughout the state. The need for assistance originally helped fuel the Heritage Initiative, which was overwhelmingly passed by the citizens in 1990," said Arizona Game and Fish Department Director Duane Shroufe.

Since 1992, Heritage grants from AGFD have resulted in $15 million worth of projects being accomplished throughout the state.

The Game and Fish Department is starting the 1997 grant process immediately. Sandy Sutton, Heritage funds administrator, has scheduled workshops throughout the state in July and August.

Heritage Information Coordinator Frosty Taylor said that Arizona's three universities, — Arizona State University (ASU), the University of Arizona (UofA), and Northern Arizona University (NAU) — received 14 grants, totaling $288,715

"These grants allow us to tap the expertise at the university level and blend it with the biological expertise at the Game and Fish Department. Through these grants, Heritage dollars serve a dual purpose of benefiting wildlife while helping to train the next generation of wildlife professionals. The citizens of Arizona are getting a double bang from their lottery dollars," Taylor said.

Black-footed Ferret Population Increasing

With the June 4 placement of 16 additional black-footed ferrets into the Aubrey Valley near Seligman, a population of once extinct mammals is growing in Arizona. The Heritage-funded Arizona Game and Fish Department reintroduction program brings the black-footed ferrets back from a 60 year absence from Arizona.

The 16 additional ferrets, eight males and eight females, joined six black-footed ferrets that were placed in acclimation pens on May 24, eight were placed May 18, and four were placed on March 27.

The small predators will be kept in large acclimation pens until this Fall when their kits are mature enough to be released into the population declines over the past 10 years due to habitat destruction and other factors.

International Migratory Bird Day Clinics Conducted

A variety of clinics and events were conducted throughout the state in May for International Migratory Bird Month.

Arizona Partners In Flight, a group formed to study neotropical migratory birds, said millions of migratory birds are returning to their North America breeding grounds, including Arizona, from wintering grounds in Mexico, Central and South America.

Although most migratory birds are still abundant, many species are at risk to loss of habitat throughout the Western Hemisphere.

Department Gets Go-Ahead For Property Purchases

The Arizona Game and Fish Commission May 17 authorized the Game and Fish Department to proceed with acquiring the Kovacs property in Cochise County near the communities of Douglas and McNeal, and the Croll Property in Yavapai County near Chino Valley.

The Kovacs property is located in Whitewater Draw. The Croll Property, is part of the Inscription Canyon Ranch on the Verde River.

Biological values on all parcels justify an acquisition utilizing the Heritage Threatened and Endangered Species Acquisition Fund.

Hot Wells Dunes Recreation Dedicated

Recent improvements to access roads to the 2,000 acre Hot Wells Dunes Recreation Area in the Safford area were funded through a $30,000 grant from the Arizona Game and Fish Department Heritage Fund.

The recreation area features an artesian well, producing in excess of 250 gallons of water per minute at a temperature of 106 degrees Fahrenheit. The well is a result of an oil drilling operation in 1928 that hit water instead of oil.

Dedication ceremonies were conducted in April for the new facility which includes two hot tubs, a restroom, 10 campsites, a hardened walkway and parking area.

Watchable Wildlife Workshop Planned

A public participation Bighorn Sheep Watchable Wildlife Workshop is scheduled Aug. 2 and 3 by the Arizona Game and Fish Department. Although free, participation is limited due to available seating on boats.

The workshop starts on Friday evening in Kingman with a gen-

July 3, 1996

Mr. John P. Wilson
1109 Skyway
Las Cruces, New Mexico 88001-4016

Dear Mr. Wilson:

I received your note of June 28 yesterday. I hope you got some good pictures when in the field. I've been to the Petroleum Museum in Midland, but I didn't think to take some pictures of the old drilling units they have rigged up on the museum grounds. They have plenty of old equipment rigged up there.

Yes, there is still some oil and gas production in Arizona, about 200 barrels of oil and 8.5 million cubic feet of gas per day from 22 oil and 7 gas wells. I've enclosed one of our new FYI series publications on mineral and energy resources in Arizona and a tabulation of production for 1995.

Its hard to say if the newspaper accounts are misplaced references to the Reed well. Both the July 15 and September 9, 1927 entries note the rig "will be moved" and the April 20, 1928 entry notes that progress is also "reported" here. Maybe the Crawford well was never really drilled, at least to any extent beyond the mere staking of the location. I guess the only real way to find out would be to field check the site.

In any event, I appreciate learning of your progress in the study.

Sincerely,

Steven L. Rauzi
Oil and Gas Program Administrator

Enclosures

1109 Skyway
Las Cruces New Mexico
88001-4016
June 28, 1996

Mr. Steven L. Rauzi, Oil & Gas Program Admin.
Arizona Geological Survey
416 W. Congress, Suite 100
Tucson, Arizona 85701

Dear Mr. Rauzi:

Taking the suggestion in your letter of June 3d, I have written to the Petroleum Museum at Midland, Tx. for information. Nothing back yet, but I anticipate that they will come through. My experience has been that with Texans, when in their area of expertise, they can overwhelm you with more than you ever wanted to know.

At the bottom of the USGS Oil & Gas Investigations map OM-201 is the interesting commentary that Arizona has (or had) one producing oil well (47 barrels) and 4 shut-in gas wells, all in the 1954-56 period. Has this situation seen any change; are there any producing oil wells today, and any gas wells, active or shut-in?

I am driving over to the Bowie area tomorrow and will be there thru July 3d, and expect to take pictures besides re-recording what is on the ground. I went thru the 14 pp. of typescript notes from the Safford newspaper and sorted nearly all of their reportage to specific oil wells without too much trouble. I found virtually nothing on the Whitlock - Penrod 1 well, which isn't one I have to deal with anyway. Also, I cannot find anything that relates to the Bear Springs - Reed 1 well, in the newspapers. What I do see are references to a Bear springs exploration 1 mile north of the Whitlock - State 1 location; see entry for July 15, 1927, last paragraph; Sept. 9, 1927, last sentence; and April 20, 1928, about the Crawford well. But the only wells shown to the north on map OM-201 are the Bear Springs - Pinal 1 and Whitlock - Penrod 1. The map does show a Bear Springs-Reed 1 well some miles to the SW. Do you think the newspaper entries are misplaced references to the Reed 1 well, or is there another well?

Sincerely,

John Wilson

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file 5-9

The company holds leases on government and state land in the vicinity of Bowie, Arizona, to the extent of about 5,120 acres and according to Penrod has received excellent reports from geologists and with geological instruments. There is no stock on the market the officer of the company said."

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At the time operations were suspended, the drill had reached a depth of 1,325 feet and quite a bit of gas and some oil has been encountered."

10/7/27 The Whitlock Oil Company has temporarily suspended drilling in the same locality awaiting another shipment of casing now en route. This well has gained a depth of 1675 feet.

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Mr. Thomas has been one of the promoters in the oil development work in this section and is very enthusiastic as to the future.

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State of Arizona
Arizona Geological Survey
416 W. Congress, Suite 100
Tucson, Arizona 85701
(520) 770-3500

Fife Symington
Governor

Larry D. Fellows
Director and State Geologist

June 3, 1996

file 5-9

Mr. John P. Wilson
1109 Skyway
Las Cruces, New Mexico 88001-4016

Dear John:

Thank you for sending the several newspaper quotes on early drilling activity in San Simon Valley. I'm not familiar with the "oil affinity instrument" mentioned in the articles. A seismograph instrument measures and records the travel time of sound waves through the earth, sourced either by dynamite or vibroseis at the surface. The descriptions in the accounts do not make it entirely clear if the "Trumbull Seismograph" was a true seismograph instrument in this sense, or something else, like maybe a witching stick?!

You may find information on old drilling equipment by contacting a museum in a drilling town. The Oil Museum in Midland, Texas, has several of the old rigs rigged up, and it may be a good source. Maybe the museum in oil towns like Roswell or Farmington.

Finally, a copy of the section on the overthrust play in Arizona from *Oil and Gas in Arizona* by Nations, Brennan, and Ybarra is attached. This article gives a good overview of that play in Arizona.

Sincerely,

Steve

Steven L. Rauzi
Oil and Gas Program Administrator

Enclosure

1109 Skyway
Las Cruces, New Mexico
88001-4016
May 29, 1996

Mr. Steven L. Rauzi,
Oil and Gas Program Administrator
Arizona Geological Survey
416 W. Congress, Suite 100
Tucson, Arizona 85701

file 5-9

Dear Mr. Rauzi:

Back in March of this year you were most helpful with information about several oil wells drilled in southern Graham County, north of Bowie, back in the late 1920's. These were the Whitlock Oil Co. State 1, Whitlock Oil Co. Penrod 1, and Bear Springs Oil & Gas Co. Allen 2 (Pinal 1) wells. Since then I've managed to acquire a copy of the USGS Oil & Gas Investigations Map OM-201 (a xerox from the USGS library) and have gone thru the Safford newspaper from the 1927-1932 period, transcribing from this all of their reporting on drilling activity. A kind librarian at the Arizona State Library in Phoenix went thru their hard copies of the San Simon Valley Oil News from this same period and photocopied the more substantial articles about the doings of the various oil companies. You of course had sent me copies of the articles, from other newspapers, that are in your files. Yet to come are copies of the annual reports filed by several of these companies, from the Arizona Corporation Commission.

It looks like the only two wells I will be expected to deal with directly for the Safford BLM office are the Whitlock State 1 and Bear Springs Pinal 1 locations. I have yet to go thru all of the newspaper materials and sort out which paragraphs deal with which wells; this will be about the next step. At this time however I am enclosing for you a copy of my notes plus 2 printouts from the Safford newspaper. There are a number of wells represented, and I suspect that sometimes the paper's mileage estimates from Bowie (or whereever) for well locations may not be accurate. For what they're worth, here you are.

I have been curious about two aspects. One is this reliance on oil affinity instruments (i.e. May 13, 1927; also July 15, 1927), which in one article (Nov. 25, 1927, p. 8) is referred to as the Trumbull Seismograph. There seems to have been more than one type of device. Do you have an idea as to what these things were and how they worked?

As you'll see, there were some accidents. A boiler blew up at one rig near Pima, and a cyclone blew down the derrick at the Pinal 1 well at one time. I am told that there is debris around both of the well locations I will be visiting. What I would like to see is photographs or drawings, perhaps catalog illustrations, for equipment that would have been used in drilling oil wells at this period. We even have some names; No. 28 Star drilling machine, and a Keystone rig; also an Okell combination rotary. Can you advise me where to look to find illustrations that might show such equipment well enough that I could at least tentatively identify old oil drilling hardware if parts are still lying around? Thanks.

Sincerely,

John Wilson

John P. Wilson

June 1, 1996

Dear Mr. Rauzi;

I seem to recall that during the late 1970's - early 1980's there was a burst of oil exploration activity in what was being called the "overthrust belt", which at least included far southwestern New Mexico and I presume into Arizona. Did this activity extend through the old Bowie-Willcox-San Simon oil field areas, from the late 1920's? Can you advise me whether there is an article somewhere that would give me an overview of the drilling activity, and the findings (if any) in this "overthrust belt" period? I recall newspaper articles but didn't save any clippings relating to this. Thank you very much.

Sincerely,

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[redacted]

GRAHAM COUNTY GUARDIAN AND GILA VALLEY FARMER (Safford)

Markets

LOCAL PRODUCE
Buying Prices on Poultry

Heavy Hens, lb	20c
Small Hens	15c
Roosters, lb	10c to 20c
Broilers, lb	25c
Friers, lb	25c

Retail Selling Prices

Bananas, lb	15c
Eggs, Doz	30c
Beets, bunch	5c
Carrots, bunch	5c
Bell Peppers, lb	30c
Radishes, bunch	5c
Celery, bunch	20c and 25c
Lettuce, 2 heads	25c
Cabbage, lb	6c
Green Chili, lb	25c
Fresh Tomatoes, 2 lbs	25c
Lemons, doz	30c to 40c
Oranges	30c to 60c
Cooking onions, 3 lbs	25c
Onions, bunch	5c
Grape fruit, 2 for	25c
New Potatoes, 4 lbs	25c
Rhubarb, 2lbs	25c
String beans, lb	15c
Squash, lb	5c
Cucumbers, 3 lbs	25c
Cantaloupes	5 to 10
Watermelons	25c
Okra	15c
Plums, 2lbs	25c
Seedless grapes, 2lbs	25c
Peaches, lb	15c

EGGS
PHOENIX
Buying Price

Brown, extra	26c
White, extra	25c
White, medium	23c
White, small	14c

SAFFORD

Eggs, brown per dozen	25c
White, per dozen	27½c

COTTON MARKET
COTTON SPOTS AND FUTURES

NEW YORK—The cotton market Early selling on relatively easy cables was quiet but generally steady today, and favorable weekly weather was absorbed on moderate setbacks and prices later rallied on covering with some trade or commission house buying. October sold up from 17.75 to 17.80 and was holding around 17.81 in the mid-afternoon market when active months were about 3 to 4 points net higher. Spot quiet; middling 17.10. Close: January, 18.03; March, 18.02 to 18.83; May, 15.45 to 15.46; July, 17.46; October, 17.80; December, 15.02 to 15.03.

CATTLE MARKET
KANSAS CITY

CATTLE—7,000; calves 1,000; beef steers and yearlings opening slow, steady to weak; she stock mostly steady; bulls strong; vealers steady to 50c higher; stockers and feeders slow, weak; choice medium weight steers held above $13; good to choice lightweight steers $11.35; good medium weight whitefaced Kansas grassers $12.10; common Kansas grazed Texas grassers $7.65-7.85; practical veal top $12.50; two loads Kansas grassers on country accounts averaging 1,100 lbs. $10.75.

LOS ANGELES

LOS ANGELES—Cattle small supply cleaned up readily at strong prices medium 1045 lb. steers 8.60; few she stock 5.00-6.00; calves 50, steady; vealers 10.00 to 12.00.

GRAIN MARKET

Geologist Reports On Oil Indications As Found In Graham Co.

The following report of Claude Palmer, the geologist, who checked the Trumbull instrument in the proven oil fields from Florida to Graham county and who also mapped the two structures now being drilled with eastern money, is very interesting to the people of Graham county, showing why these men believe there is oil in this valley. We are indebted to H. T. Proctor of Safford, who leased these two structures, for this copy of the report which we are printing below.

February 25, 1927.

W. W. Todd, 32 Pearl St.,
New York City.
Dear Sir:

In compliance with your request, I am pleased to submit to you a report of my findings and impression of the M. C. Trumbull oil affinity instrument or machine. Also my opinion of the Arizona structure owned by Messrs. Leet, Trumbull, Proctor and others, and on which you were contemplating the purchase of an interest for the purpose of helping defray the expenses for drilling a test well to test the properties for oil or gas.

Of course, as you accompanied Messrs. Leet, Trumbull and myself throughout the trip from Florida to the Spindle Top fields of Beaumont, Texas, and then from there to El Paso, Texas, and later to Graham county, Arizona, and observed my work of comparing and testing the accuracy of the several localities, it will not be necessary to make an extended report. Therefore, suffice to say that I selected the Beaumont oil field as the place for the first test because this locality was unusual, to the extent that it had produced more oil of high grade paraffine base from shallow sand wells than any other one spot of like size in the world (the old Spindle Top field) and had eventually become stripped of all oil excepting a very few wells yet producing a small amount, and in addition the new Spindle Top field lately being developed from sands of from 2200 to 3600 feet deep, and lies less than a quarter of a mile from the edge of the old field and which fields are divided by the effects of the tremendous salt core, which was instrumental in causing the uplift.

This situation made an ideal locality to test the instrument on and off light oil of limited amount, the dry streak including salt core, and on and off heavy oil of large volume.

While I had previously been biased in mind to a certain extent, against Mr. Trumbull's machine or instrument, and had considered it the same as many other "doodle-bug" contraptions that I had checked against geology heretofore and found lacking, I was surprised and dumfounded upon witnessing the action of this machine or instrument while Mr. Trumbull took thirty tests at locations designated by me, and in every instance it registered correctly according to geology, and the production of the field. I was then convinced that the instrument had an affinity to petrolliferous content.

To be sure that its readings were not influenced by minerals, lime, coal, salt, etc., I had him take a test 20 feet from a well which had been drilled into the salt core at 1580 feet depth, without production. It did not register. This test also convinced me that the machine acted perpendicularly as there were producing oil wells within 1000 feet distance.

I kept my own counsel and said nothing, but thought considerably upon the subject during our twenty-four hour run across Texas into the city of El Paso, where the surrounding country has been thrown up by an igneous core like which had caused the strata of the different formations from the territory to and, including the Pre-Cambrian to emerge, creating a major Monocline at the contact.

I had Mr. Trumbull set his instrument and take test readings in numerous places where the upturned edges of all strata, including ignite coal, Cretaceous shales, Jurasic and Trifasic Limestones and gypsum stratas as well as Prefmain-Carboniferous, sandstone, lime and cement stone and shales, Cambrain and Pre-Cambrain stratas, carrying sulphureous waters, alkaline waters, were apparent. It did not register.

I was satisfied by this time, after comparing notes, that I was inspecting an instrument or machine that according to test demonstrations, had an affinity to petrolliferous matter and something that may be of exceptional value to geologists and the Oil Fraternity. If intelligently used in connection with structural geology, to the extent of determining at least paraffine and asphaltic base oils in unproven territories.

As you know, I made considerable study of the formations as they existed, both east and west of the Continental Divide as we traveled by motor from El Paso, Texas, to the Gila valley in Graham county, Arizona, in order to intelligently compare the structural features of your anticline near Safford, which is in the heart of the Gila valley district. Nearly all formations lay regularly in succession on the east monocline of the Divide, and compared favorably with other districts on the eastern slope that I have examined, while the structural features on the west side of the Monocline were to a great extent covered with later Quatenary deposits and lava rock of glacial drift effects, etc., which made the structural features of the lower formation hard to determine.

Upon reaching the Gila valley in Graham county, Arizona, I was pleased to note the feature of an uplift, arising through an extensive syncline lying between two mountain ranges crossing a valley of about twenty miles wide.

My conclusions, after a thorough examination of the structure which lies from 12 to 16 miles northwest of the town of Safford, which you are expecting to be interested in, is that you have a closed structure worthy of a test for oil or gas, providing the well is drilled to a depth of at least 3500 feet, in order to test both sands if necessary. The outline of this structure is very discernible and it appears to be one of several along a major Antecline. I was very well pleased with the action of Mr. Trumbull's instrument or machine upon this structure. We commenced testing with the machine at and around the same as we did on the edge of the Florida structure. After checking around the edge of the structure we checked two cross-sections across the apex of the structure (see blue print).

It registered upon two producing sands in the apex of the structure, while it registered on but one sand around the edge of the structure. The instrument registered perfectly according to structural geology. The pleasant surprise was the exceptionally large readings that the machine registered upon the apex of the structure at the locations mapped out by me for the first test wells to be drilled. In fact it averaged from 700 to 1300 readings around and across both locations. These were the highest readings that were recorded on the trip; in fact they were more than double the average readings from the new Spindle Top field where we took tests beside wells making from 2,000 to 3,500 barrels per day, settled production.

Therefore, my conclusions are that the machine or instrument does register to petrolliferous matter, that it does not register or is not influenced by other minerals or formation content, that it does register increased or decreased production in the sands from place to place, according to porosity of sands, that it registers accurately, according to structural geology, even though it is influenced to higher readings on account of either hydrostatic or gas pressures.

The machine will not tell the depth to any sand, will not tell the character of the oil, will not determine the gathering ground of the area surrounding the field, will not determine the hydrostatic pressure or syphonic conditions to be encountered. However, all this can be determined by competent geologists, while the machine or instrument does record conditions that no geologist can determine. Therefore, I believe, if this instrument is used in conjunction with a geological knowledge, that the combination will create a revelation in the history of the oil industry.

Respectfully submitted,
(Signed) CLAUDE P. PALMER,
Geologist.

- In Cen- r school ld berry : the fact and cold the time h school Valentine he home hich was ames of and re- hes and Gordon ers left eeks at and Mr. d down ed rela- from service Sunday. ord was elatives. olomon- school Church. ere last nied by onville. a mem- h coun- ls, rep- ciety of peakers in Cen- been ill was a sday of son of ral last uffering ast sev- growing Martin nly. recov- ficiently ro other ill quite te post- ren and tokens ensely.

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meeting ly held l into a al time people is both s enter- he week J. Allen return- N. M., by Gila morning rofessor sephine fections, eresting students Ira. Em- Tuesday do ordi- emple. re Sun- ldren in who has Nelson, weeks Tucson rs. T. S. a short Depending of the oil returned and Mrs. s Nina, ill home, fers and wails for parents.

visiting with Mr. and Mrs. Granvil Pace, who are here from Cedar City, Utah. Mr. Pace is a brother of W. W. Pace. Those present were Mr. and Mrs. W. C. Pace, Mr. and Mrs. J. Verne Pace, Mr. and Mrs. D. C. Pace, and Mr. and Mrs. A. E. Jameson.

The goat men are getting ready for the spring shearing which will begin as soon as the weather clears up.

Mr. Morrow has completed the interior work of the four apartment house he has made out of the Claridge home on Main street. It is a very decided improvement and the apartments have been rented for sometime.

GLENBAR NOTES

(Lucile Hervert)

George Echols, who was recently married to Miss Bessie Thompson, gave a wedding dance Thursday evening. A large crowd was present and everyone had a most enjoyable time.

Mrs. Rilla Curtis and daughter, Mrs. Lucy Western, arrived here from Artesia, California, Saturday evening, where they spent the winter. They intend to make their home here.

Anthon Christensen and wife were visitors from Eden Sunday afternoon.

President H. L. Payne of the Layton ward and William McBride of the Pima ward were visitors and speakers at the church services here Sunday evening.

Ami Curtis, formerly of Glenbar, is lying in a hospital in Artesia, Cal., suffering an injured back. According to reports of the accident he was loading hay, and the wagon being wet and slippery he fell and struck his back on a timber. He is improving and expects to return home in September.

The Mutual Improvement Association of the Matthews ward held a very interesting meeting Sunday evening and a number of visitors from the different wards in the stake were in attendance and gave some very interesting talks. They were Chas. Clawson, W. T. Mendenhall, Miss Thelma Layton and Mr. Solomon of the Layton ward, Mr. and Mrs. Moroni Skinner of the Kimball ward, Mr. and Mrs. H. H. Ottie of Pima, Mrs. Inez H. Lee, J. H. Mangum of the Thatcher ward.

Earl Long of Cottonwood Wash was a visitor at the home of Mr. and Mrs. H. L. Smith Monday afternoon.

Mrs. Ervin Herbert is visiting at the home of her mother, Mrs. Echols.

E. Herbert of Geronimo made a business trip to Glenbar Tuesday.

Miss Clella Bryce attended the dance at Bryce Tuesday evening.

Clifford Hughes, a former resident of Thatcher has moved into the Dave Rogers' place at Glenbar.

ONE FARMER PROVES DAIRYING TO BE A PROFITABLE BUSINESS

That dairying is one of the best paying industries in the Gila valley is the belief expressed by C. L. Allred Tuesday when he called at the Guardian office to renew his subscription to the paper. Mr. Allred bases this belief on actual experience of many years in the business.

Ten years ago he purchased a 53-acre farm in the Artesian district and put a few dairy cows on it, going in debt for the farm and the cows both. Today, at the end of the ten years, he is not owing anyone, so far as he knows, the cows having paid out the debt on themselves and on the farm.

In addition to his herd of fine cows, Mr. Allred raises chickens and hogs enough to supply his family and have some for the market.

The hay raised on the farm and fed to the dairy herd, Mr. Allred figures, brings him $25.00 a ton. The products from the herd brings him an income that is steady and does not fluctuate with the market as do cotton, hay, etc., and he therefore knows just what he will have to meet the expenses of his family and his farm each month.

Wm. A. Carraway left for his old home in Te...

Wm. J. Vaughan, who is interested in the drilling of the oil well at Pima, returned to Safford the first of the week from a business trip to Phoenix. While in the capital city Mr. Vaughan told in an interview with newspaper reporters how he became interested in the oil proposition in Graham county, saying:

"The Gila basin," he said, "has been favorably noted by geologists as the possible seat of an oil basin for many years. In particular, Edward B. Hill of San Francisco, who more than any other man turned my attention to West Texas, called it to my attention six years ago. But it was not until the development of scientific oil detectors that I remembered his advice and came to look the country over for myself.

"There are two types of detectors. One reacts to the presence of oil and indicates volume. The other indicates only the depth at which oil may be struck. The first type may be described as an affinity instrument. It carries a reservoir of compound chemicals similar to those contained in petroleum. These chemicals are sympathetic to the vibrations sent out by electrons of the petroleum atoms and respond when the reservoir is suspended over a subterranean reservoir of oil. Amplifiers similar to those used in magnifying radio vibrations step up the sympathetic vibrations in the container until they can be mechanically indicated on a dial.

"Well, this affinity instrument was very strongly recommended to me by responsible, level headed men who had tested it. I undertook tests of my own in the West Texas field. My inclination, I am free to confess, was in the direction of extreme skepticism. If there is anything an experienced oil man is ashamed to be associated with, it is a "doodle bug" of any sort.

"But I got readings in proved country that I knew intimately, and in dry country—known to be dry because I had tested it by sinking dry wells—that provoked me to further investigations. In all, I spent 15 months tracking down the experience of everybody who had tried the affinity detector and in the end I brought one to Arizona and went over the Gila basin. That was a little more than a year ago.

"Five miles west of us another New York syndicate headed by W. W. Todd, another responsible operator with ample backing, is also drilling on the strength of detector readings. I think you may say that the present quantity flow of eastern capital into Arizona drilling dates from the invention of the modern scientific detector.

"It takes money to drill a wildcat well, varying, of course with the probable depth. Perhaps $100,000 would be an average figure for what the Arizona wildcatter may expect to encounter in the way of difficulties.

"Our own well, wholly financed by New York City and Buffalo capital, was spudded in last August, but active drilling was not really begun before November 1. We are now down about 1,500 feet, and at 2,000 feet expect to set our 10-inch casing on a limestone bed which we expect to encounter at about that depth. We began with a 24-inch hole.

"At 1,100 feet we tapped a deposit of rock salt 145 feet thick, laid down in early geologic times when the sea covered Arizona. At present we are bringing up drill cuttings that under ether tests, show the existence of oil, but we do not expect to get into production sands much above the level of the sea. That was our experience in West Texas and would take us down in this country, about 3,200 feet.

I am inclined to regard the Gila basin as a possible offshoot or extension of the West Texas field, stretching across New Mexico. The state is surrounded by other oil bearing states—New Mexico, where there are proved fields now in production, Texas, Utah, Colorado and California. The formations traversed by our drill much resemble those found in Colorado."

STATE SIFTINGS

TUSCON—Additional improvements costing between $150,000 and $200,000 are to be made to the Santa Rita Hotel and when the remodeling is completed the entire aspect of the big hostelry will be changed.

TOMBSTONE—Loss estimated between $12,000 and $15,000 resulted to business property here last week when fire destroyed several of the business houses in the heart of the town. The fire started when a gas tank in the Owl Cafe exploded while a leak was being mended by Joe Fredericks, 13. He was perhaps fatally burned and another, Robert Gilmore, was severely burned in attempting to save the boy.

MIAMI—Three Mexican mine laborers were crushed to death at the Inspiration Consolidated Copper Company plant when they were carried to into workings of the mines on a conveyor belt on which they had gone to sleep.

TUCSON—One of the large Pickwick stage line busses was completely destroyed by fire which started from a heater. No one was injured and all baggage was saved.

AFTER CONDEMNING AUTOS FOR YEARS BUYS CHRYSLER 52

The Red Indian's trail, the pioneer's covered wagon, the stage coach, the railroad train and the steamboat, street cars, horseless carriages and their modern development, the fleet and beautiful automobile of today, even the aeroplane—all methods of transportation developed in the fast moving progress of the Nineteenth and Twentieth centuries have been watched with interest by Chaplain James King Gibson during the 82 years of his busy life. But until very recently the veteran national chaplain of the G. A. R. knew them only as spectator and passenger. Salesmen found him immune when they tried to induce him to buy.

Not until Walter P. Chrysler gave to the world an automobile so full of new beauty, smart handling, flashing acceleration and dependability that its appeal could not be resisted, did Dr. Gibson fall from grace. A few weeks ago he went into the showrooms of the Chrysler agency of Dayton, Ohio, and came out the owner of a Chrysler "52" coupe, the first car he has owned.

With only a few lessons he mastered the details of gear shift and steering, and he is now an enthusiastic Crysler owner, driving through Dayton's city traffic with as much ease and certainty as any representative of young America.

Best Man: "Wasn't it annoying the way that baby cried all during the ceremony?"

Maid of Honor: "It was dreadful. When I am married I shall have engraved on the invitations, "No babies expected."

SHERIFF'S NOTICE OF SALE NO. 2?33

IN THE SUPERIOR COURT OF THE COUNTY OF GRAHAM, STATE OF ARIZONA.

M. E. O'Bryan, attorney-in-fact for the heirs of T. O'Bryan, deceased, plaintiff, versus Orville L. Larson and Orville L. Larson, administrator of the estate of Hazel Larson, deceased, defendant.

Under and by virtue of a special execution and judgment of foreclosure and sale issued out of the Superior Court of Graham County, Arizona, on the 23rd d... ...November, 1927

to-wit:

All of lot 4 in Block 25 of Thatcher Townsite and bounded as follows, to-wit: Beginning at a point 32 rods North and 95 rods East of the Southwest corner of Section 2 Township 7 South of Range 25 East of Gila and Salt River Meridian in Graham County, Arizona; thence running East 16 rods; thence North 16 rods; thence West 16 rods; thence South 16 rods to the place of beginning, containing one and six-tenth (1 6/10) acres. Also one share of stock in Union Canal Company.

together with all and singular the rights and appurtenances thereto in any wise belonging.

Public notice is hereby given that on Monday the 12th day of March, 1928, at 10:00 o'clock in the forenoon of said day at the court house door in the City of Safford, County of Graham, State of Arizona, I will, in obedience to the special execution, sell the above described real estate to satisfy said judgment, interest, costs and expenses of said sale, to the highest bidder for cash, lawful money of the United States of America.

Dated this 15th day of February, 1928.

H. M. TATE,
Sheriff.
By SETH DODGE,
Deputy.

First Publication: February 17, 1928
Last Publication: March 9, 1928

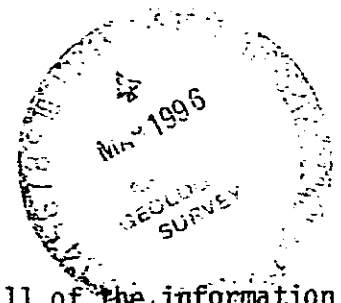
(cover)

GRAHAM COUNTY GUARDIAN AND GILA VALLEY FARMER (Safford, Ariz.), February 17, 1928, p. 6

"Eastern Man Tells How He
Became Attracted to Pima
As a Promising Oil Field"

1109 Skyway
Las Cruces, New Mexico
88001-4016
March 10, 1996

Mr. Steven L. Rauzi,
Oil and Gas Program Administrator
Arizona Geological Survey
416 W. Congress, Suite 100
Tucson, Arizona 85701



Dear Mr. Rauzi:

Thank you more than I can say for all of the information you sent me about the two Whitlock Oil Company wells. The newspaper articles are especially helpful in indicating that different companies were carrying on drilling operations for several leaseholders in the same general area at the same time. I think you are correct though, in that the two Whitlock Oil Co. wells appear to have been the "flowing well" in the NE¼, NE¼, Sect. 36, T10S R28E, and the "Badger Den well" in the SW¼, NE¼, Sect. 20, T10S R29E. 5-9 5-10

From the materials you sent I now have a much clearer idea as to where to direct additional inquiries. For example, we need to clarify ownership of the mineral rights as of the late 1920's. I had assumed that the Whitlock Oil Co., State 1 well in Section 36 was on a BLM section, since it is the BLM's Safford District office that is interested in the background on this well. But from what you found, and the statement in the Holbrook newspaper that "... the Whitlock Oil Co., having a state land lease 14 miles north of Bowie and a drilling site chosen, ..." it certainly sounds like Section 36 was a State section then. I assume that I need to direct this kind of question to the BLM and to the State Land Office.

With the names of both the companies involved and the individuals who served as officers in the Whitlock Oil Co., I can write to the Arizona Corporation Commission to ask about annual reports and whatever else they may have by way of records of this corporation.

My research will go to Dr. Pat Gilman at the University of Oklahoma, who will incorporate it with the results of her archeological field school in the area and pass the information to the BLM. My role involves two historic sites. One is the Whitlock #1 well location. The other is a trash dump and historic camp site about 1/4 mile north of the well, in Section 25. Dr. Gilman thought this might be the drillers' camp associated with the Whitlock #1 well. It seemed a bit remote, so I asked the BLM about any records of homesteading activity in Sections 25 and 36. They reported none.

After seeing your information I think Dr. Gilman was half-right with her expectation; the site in Section 25 was probably a drillers' camp but associated with another well. The Dec. 4 and 5, 1927 newspaper articles said that the Pinal Oil Co. of Superior had been drilling for the past 6 months, at 1,300 ft. north of the Whitlock Co. well. By reference to the chart with oil & gas map OM-201 it appears that the Pinal drilling site is the Bear Springs Oil and Gas Co., 5-7 Allen 2 (Pinal 1) well location, completed in 1929 and abandoned. It was this well (ref. OM-201 again) that extended to a depth of 1,555 ft., not the Whitlock Oil Co. Penrod 1 well. The USGS Water-Supply Paper 769-F seems to have confused the three. Since I will have to deal with this campsite, I would like to see what records you have for the Bear Springs.... Pinal 1 well. Could you also make copies of these for me? I expect that this summer Dr. Gilman may want to look for the well site too.

The Dec. 4, 1927 article in the Phoenix paper raises another question. In this article is the statement that Whitlock #1 was drilled with a cable tool. However, in the column just before, the article says that oil has been flowing with the water "over both slush pits at the well and through the ditches as far as three-quarters of a mile across the desert." Also, that "a vast earthen dam has been constructed at some distance from the well" and that oil would be permitted to flow out into this reservoir, etc. I assume that things never got that bad or the site would probably be on the Superfund list, but I wonder what was meant by the two slush pits at the well? In your opinion, what might these have been; for what purpose? All I can think of is that these might have been ponding areas to contain the water that had been struck at higher levels in the well and that was flowing under artesian conditions. I don't know if the term mud pit was in use then, but absent the use of a rotary drilling rig, there shouldn't have been any mud pits at the site, do you think?

Thank you very much once again for your assistance.

Sincerely,

John P. Wilson

John P. Wilson

State of Arizona
Arizona Geological Survey
416 W. Congress, Suite 100
Tucson, Arizona 85701
(520) 770-3500

Fife Symington
Governor

Larry D. Fellows
Director and State Geologist

March 6, 1996

Mr. John Wilson
1109 Skyway
Las Cruces, New Mexico 88001

Dear Mr. Wilson:

The information on the two Whitlock Oil Company wells we talked about this morning is enclosed. This includes the cover sheet and lithology descriptions for each of the wells, Canfield's report on the two Whitlock wells, and the well sheet from USGS Oil & Gas Investigation Map OM-201.

Some early newspaper articles about the Whitlock Oil Company tests are also enclosed. These include articles from the 3/11/27 Holbrook paper; 4/8/27, 6/5/27, and 12/4/27 Phoenix paper; and 12/5/27 Tucson paper. It looks like promotional activities may have led to running of casing in the wells.

Two wells on the Javelina Peak 7.5' Quadrangle map may have been originally drilled as the two Whitlock Oil Company tests. These are the "flowing well" in ne ne 36-10s-28e and the "Badger Den well" in sw ne 20-10s-29e. A copy of this portion of the Javelina Peak Quad is also enclosed.

Let me know if I may be of further assistance on any oil and gas matter in Arizona.

Sincerely,

Steven L. Rauzi
Oil and Gas Program Administrator

Enclosures

salt water for a short time. No record was kept of the temperature or of the depth at which the water stood in the well, and no chemical analysis of the water is available.

In the southeastern part of T. 10 S., R. 28 E., two flowing artesian wells, the Whitlock Nos. 1 and 2 of the Pinal Oil Co., were obtained in drilling unsuccessfully for oil. The Whitlock No. 1 well, shown in plate 53, *A*, was drilled in 1927–28. It yields a strong flow of soft, warm water (temperature 105° F.) from conglomerate at a depth of 1,445 feet, above which only clay and sand, probably lake beds, were encountered. A flow of sulphur water was struck at a depth of 1,750 feet. "Limerock" was encountered at a depth of 1,500 feet, and the well was drilled through this to a depth of 1,925 feet and finished in "sandy lime." When the well was completed the discharge was estimated by the drillers to be about 12,000 barrels (500,000 gallons) in 24 hours. The discharge is controlled by a valve at the casing head. The Pinal Oil Co.'s Whitlock No. 2 well, was drilled with cable tools to a depth of 1,555 feet. It discharges a "2-inch pipe full" of lukewarm water. The depths to the water sands in this well were not ascertained.

The location of wells in the towns of Pima, Thatcher, and Safford in 1934 is shown in figures 31, 32, and 33. The data collected by the writer on these and other wells in the valley are presented in the table at the end of this paper.

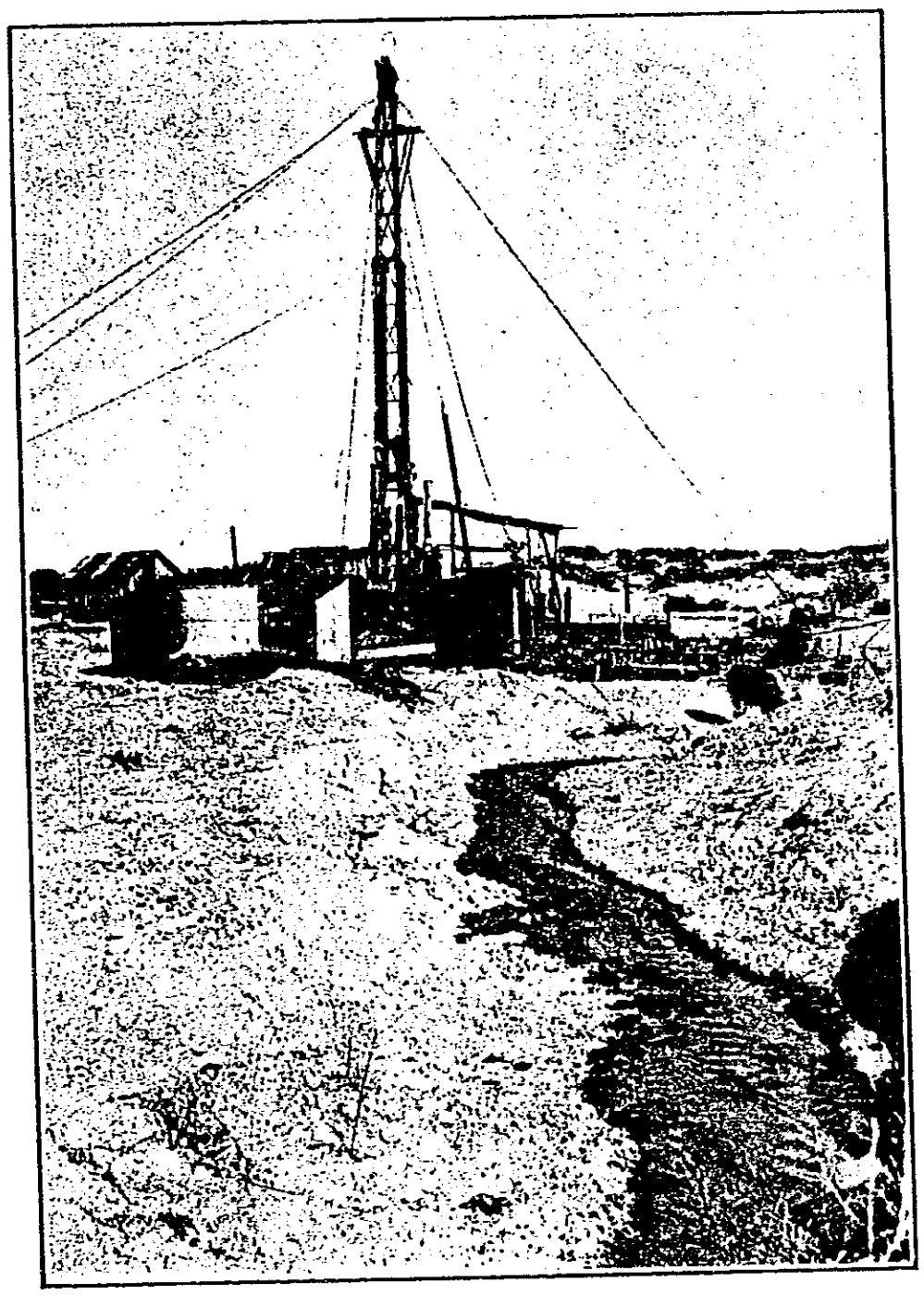
SPRINGS

The Goodwin Spring, in Goodwin Wash, sec. 35, T. 4 S., R. 22 E., near the east boundary of the San Carlos Indian Reservation, is a seepage from the alluvial gravel of the creek bottom. The discharge on January 10, 1934, was about 8 gallons a minute. This spring is reported to have yielded much more copiously some years ago.

Several springs, yielding less than 100 gallons a minute in total discharge, issue along the sloping terrace escarpment that rises about 100 feet above the alluvial lowland plain in secs. 21 and 22, T. 4 S., R. 23 E. The water seems to come from the base of porous Pleistocene (?) gravel, several feet thick, which caps about 90 feet of dense lacustrine clays of Pliocene age exposed on the hillside. The water is highly mineralized and is used only for watering stock.

A spring about 1 mile northeast of Fort Thomas, near the southwest corner of sec. 25, T. 4 S., R. 23 E., yields about 6 gallons a minute. The water issues from the base of Pleistocene (?) terrace gravel overlying dense clays of the Pliocene lake beds. The spring is used to water stock.

The residents of Eden, in secs. 28 and 33, T. 5 S., R. 24 E., normally obtain their water supply from a small spring of seasonally variable yield about 1 mile northeast of the settlement. The spring issues from a small excavation in the porous gravel bottom of a minor reen-



A. FLOW OF WARM WATER FROM PINAL OIL CO.'S WHITLOCK NO. 1 WELL.
In sec. 36, T. 10 S., R. 28 E.

USGS W:P 796-F

salt water for a short time. No record was kept of the temperature or of the depth at which the water stood in the well, and no chemical analysis of the water is available.

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The residents of Eden, in secs. 28 and 33, T. 5 S., R. 24 E., normally obtain their water supply from a small spring of seasonally variable yield about 1 mile northeast of the settlement. The spring issues from a small excavation in the porous gravel bottom of a minor recon-

trant in the face of the lower terrace. The water is stored near the spring in a small concrete reservoir, from which it is piped by gravity to the settlement. The spring dries up during several months of each year, and drinking water is then hauled from the Rhodes well, about 5½ miles to the northwest. The water of nearer wells is regarded by local residents as poor in quality.

A small spring in sec. 5, T. 6 S., R. 25 E., about 1½ miles northeast of Bryce, flows from the base of porous conglomerate that caps impermeable Pliocene lake beds. The spring yields about 12 gallons a minute of water at a temperature of 68° F. and is used to water stock. (See analysis F, p. 222.)

At Bear Springs, in secs. 1 and 2, T. 7 S., R. 23 E., two springs yield water from sand in the Pliocene lake beds where these are dissected by the heads of small streams. The spring in sec. 1 yields about 2 gallons a minute but has not been used. The water has a temperature of 54° F. (See analysis G, p. 222.) The spring in sec. 2 yields about half a gallon a minute of rather salty water.

A spring yielding less than half a gallon a minute in Cottonwood Wash, in the SE¼ sec. 5, T. 7 S., R. 24 E., issues from the base of a thin layer of gravel capping Pliocene lake beds.

A spring on the Pace estate, in the SW¼ sec. 3, T. 7 S., R. 25 E., about a mile west of Thatcher, at the southern edge of the alluvial lowland, yields about 5 gallons a minute of rather alkaline water. The water of this spring probably issues from a sandy layer in the Pliocene lake beds.

A spring known as the Porter Spring, in the southeastern part of T. 7 S., R. 25 E., which yields less than a gallon of water a minute, probably issues from a sandy layer in the Pliocene lake beds. It is used for watering stock.

A spring in the NW¼ sec. 5, T. 7 S., R. 26 E., which yields less than half a gallon of water a minute, issues from the base of gravel capping the Pliocene lake beds, on the face of the lower terrace about 30 feet above the alluvial plain.

A small seepage of water in the bottom of Stockton Wash east of Cactus Flat, in T. 8 S., R. 26 E., issues from alluvium where formerly there was sufficient water to create a marsh covering many acres. This seepage was known as the Lower Cienaga, or Solomon Spring. The water was used for irrigation until the supply failed. The decrease in discharge is reported to have taken place shortly after the drilling of four flowing wells at Artesia in 1929–30, and the possibility is therefore suggested that the seepage rises from the artesian water sands underlying this part of the valley. The same explanation may be applicable to several small springs known as Cienaga Springs (pl. 52, *B*), in Jacobson Wash, in sec. 9 of the same township, and Mud Spring, in sec. 17. Several former "mud springs" in the vicinity of Cactus Flat and Artesia have become dry since artesian wells have

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August Report of the Bear Springs Oil & Gas Company

SAN SIMON VALLEY—

San Simon Well, on SE¼N¼ Sec. 27; T. 13S., R. 30E.; Torrence ranch 2 miles west of San Simon. Walter Tuttle, driller, has the deepest oil well, drilling, in Arizona, 4230 feet, now in hard black sand (Lime) Good oil showings; 170 degree water at 4056 ft.; 6¼ in. casing hanging at 4035 ft. Will underream to 4160 ft. to shut off water and dry hole.

Pinal Oil Co. Well No. 1 on Allen permit. SE¼SE¼ Sec. 25; T. 10S., R. 28E., 17 miles north of Bowie. Sam Twentier, Field Supt. with crew of three has had a hard job to get two camps in shape to start active work. These two wells have been practically shut down for the past three years.

Whitlock Oil Co. Well No. 1, on NE¼NE¼ Sec. 36, T. 10S., R. 28E. State land 17 miles north of Bowie. Pinal Oil Co. in return for loan of National No. 2 drilling machine and 30 h. p. Buffalo Gasoline engine, owned by Whitlock Oil Co., have repaired and put in good working order to pull 6. 5-8 in. casing and plug Whitlock No. 1 Well back to 1500 ft. before moving the above equipment to Pinal No. 1 Well.

Whitlock No. 2 Well, on NE¼NE ¼ Sec. 20, T. 10S., R. 29E., on Penrod permit, still shut down at 521 ft.

Finn No. 1 Well, 9 miles north of Bowie on SW¼NE¼ Sec. 28, T. 11S. R. 28E., Reed permit still negotiating with eastern capital to drill his permit.

Ryan et al Well on SE¼NW¼ Sec. 34, T. 14S., R. 30E., State Land 9 miles south of San Simon at 920 ft. Tentative option has been given a group of oil men on the fifteen state land sections, held by R. J. Ryan and associates of Montebello, Calif. A "K" type Okell drilling machine is on location and the option calls for completion of the well.

SULPHUR SPRINGS VALLEY—

Benedum-Trees, Arzberger No. 1 Well on NW¼SE¼, Sec. 19; T. 15S. R. 26E., 14 miles SE of Willcox. 4000 ft. 8¼ in. casing unloaded by S. P. Ry, and delivered to well. 10 in. set at 2348 ft. Depth 3140 ft in hard brown shale with shells. Little water in hole. Two towers with crew of five. R. W. Hickman in charge, making very good progress, considering the many delays. John Pugh of the Two John Drilling Co., contractors, made a flying trip from Shrevesport, La., Denver, Willcox and back to headquarters.

Geronimo Oil Co., No. 1, No. 2, and No. 3 Wells, in town of Willcox have shut down for the time being. Mr. I. R. Borck is in charge and expects a large heavy standard rig within 60 days. The splendid oil showings in their wells should warrant further explorations.

S. V. Windle, Riggs No. 1 Well N E¼ Sec. 10, T. 17S., R. 28E., still waiting for equipment necessary to spud in.

Western Water Works of Alamogordo, N. M., was awarded the contract for drilling the state well for artesian water to irrigate 10,000 acres in the Stewart District. An appropriation of $10,000.00 was allowed to do this drilling.

GILA VALLEY—

Gila Oil Syndicate Well No. 1, SW ¼NE¼ Sec. 30, T. 5S., R. 24E., 7 miles NW of Pima, shut down at 2680 ft.

Underwriters Syndicate Well No. 1 (Vaughn Oil Co.) 2 miles NW of Pima, on Mary Mack farm, NW¼N E¼ Sec. 13, T. 6S., R. 24E., standing shut down at 3765 ft. Several deals pending to finish this well to completion.

SAN PEDRO VALLEY—

Century Petroleum Co. Well No. 1 on Colrazier permit, NW¼NE¼ Sec. 17; T. 17S., R. 19E., 9 miles west of Benson, expecting to contract the deepening of this well, now shut down at 1550 ft.

Understand interested people are looking over this prospect with view of starting drilling.

San Pedro Oil Corp., No. 1 Well on Smith Bros. ranch 1½ miles SE of Mammoth, shut down at 1400 ft.

CHINO VALLEY—

Pinal Oil Co. Lantz No. 1 Well NE¼NE¼ Sec. 3, T. 16N., R. 2W., 19 miles north of Prescott spudded in August 16th. Now about 300 feet All casing on rack, all supplies purchased, work is progressing in fine shape, with a steam Star rig, under supervision of Fred Womack, Supt. A water well was drilled to 305 ft. and 350 bbls. a day artesian flow of good water was encountered there, making drilling water for that district a certainty.

Yavapai Oil Development Co. Kissh No. 1 Well, Sec. 27; T. 18N., R. 2W., 29 miles north of Prescott, in charge of A. L. Kissh, who I am told, has a number of Japanese clients interested in this development. Their No. 1 Well will be spudded in on the 30th, I hear.

There is a possibility of a third well being drilled on the Puntenney Ranch. I hear that all arrangements have been made and the rig is being shipped in from Los Angeles.

"Petroleum" a bulletin issued by the University of Arizona and prepared by Dr. G. M. Butler and J. E. Tenney, is now ready for state distribution. The bulletin treats of the origin of petroleum, methods of concentration, favorable structures, hints to prospectors and tests for petroleum.

NEW COMPANIES INCORPD.—

Blue Ribbon Refinery Co., capital 100,000 shares, no normal par value. Incorporators, A. C. Hill, Robert U. Moore and R. H. Orkin, S. F.

National Carbonic Ice Co. capital 1,000,000 shares, no par value. Incorporators, R. M. Malone, H. A. Kehler and C. A. Winder, all of San Francisco.

Appointment of eight agents in Arizona was made yesterday by the Texas company, a foreign corporation, empowered to operate in Arizona. The agents are: Folsom Moore, Bisbee, Cochise Co.; Ed Matteson, Wendon, Yuma Co.; H. R. Sisk, Nogales, Santa Cruz Co.; J. Verne Pace, Safford, Graham Co.; L. F. Sweeting, Clifton, Greenlee Co.; A. W. Sydnor, Globe, Gila Co.; Kirk Moore, Tucson, Pima Co.; Ned Creighton, Phoenix, Maricopa Co.

BOB THOMAS.

Business Agent Bear Springs Oil & Gas Co., Bowie, Arizona.

PAGE TWO

MANY TUCSO[N]

ESTIMATED FLOW OUT OF "DISCOVERY WELL" 1000-5000 BLS. DAILY

Flow Brought In November 9 and Kept Silent While Discoverers Add to Leases; Local People Inspecting Area

Much interest is being shown in Tucson in news of the discovery of oil in commercial quantities in the Whitlock Oil Company's prospect No. 1, 17 miles south of Bowie. Announcement of the strike was officialy made yesterday in Phoenix by T. F. Penrod, president of the company. Man yof the stockholders in this company and in other companies operating in this section are residents of Tucson.

Several Tucsonans interested in this and other properties are planning trips there this week to check up on recent developments.

The Whitlock Company discovery was made November 9, and is said to have been in good quantities. No announcement was made of the strike to allow the company time to secure other acreage in that vicinity. Oil is said to have been found here at the 1427 foot level in quantities much larger than any previous find in the state. Previous "discoveries" have not panned out well.

Since striking this pay sand, the Whitlock company has been busy acquiring additional land, so that now they have a total of 70,000 under lease.

The well is located in section 36, township 10 south, range 28 east. Estimates of its production possibilities vary from one to seven thousand barrels a day. It will be producing at capacity in three weeks, according to the president of the company.

Among Tucson business and professional men interested in this and other companies are J. Cress Myers, Dave Bloom, Dr. B. F. Morris, Dr. E. J. Gotthelf, John Murphey, John Martin, George Kitt, George Martin, F. J. Fairweather and Joe Stinson.

Local Firm Leases Tract

The firm of Myers and Bloom has a tract of 160 acres in that vicinity under lease, which has been released to a coast firm, which is now drilling there. They are already at a considerable depth [illegible] soon. Mr. Myers is also a stockholder in the Whitlock company.

Another particularly interested Tucsonan is F. J. Fairweather, who now resides here but formerly lived at Bowie. He has control of quite an acreage there, and has leased a portion of it. He expects to make a trip there this week.

The well where oil is said to have been struck has been capped since that time, and has been under special guard. The top of the hole is barricaded with barbed wire and at night two guards stand watch. This precaution is taken, it is said, because of trouble in that district a number of years ago when a strike was made and the well was damaged during the night when a large amount of scrap iron was dumped into the hole.

Oil At 1200 Feet

At a depth of 1200 feet in the Whitlock company well, a flow of 6000 barrels of clear water was struck. Farther down a conglomerate was encountered after which came the oil sand. Drillers had expected a cap rock above the oil sand. Water which spurted out of the well brought a good showing of oil. It found the drillers unprepared to handle the oil flow, so they capped the well and sent in a rush order for cement. A contract has been let for casing cement which should be delivered this week.

The well was sounded out after being cut off, and it was determined that there was an oil sand at least 22½ feet thick, according to a statement given the Arizona Republican by Mr. Penrod. Oil has been flowing with the water over both slush pits and through ditches as far as three-fourths of a mile from the well. Oil flowing from the well has been analyzed as of high gravity with a paraffin base, differing radically from California oil, being more like the New Mexico oil where there are now about four hundred producing wells.

Officers of the Whitlock company [illegible] Mr. Penrod, who [illegible] Globe; LeRoy Kennedy, secretary, of Miami; Bob Thomas, geologist, and Boyd V. Lind, geophysicist.

Pointing out that there were seven or eight prospects being drilling in the district at the present time, Mr. Penrod declared he believed the discovery would start development unprecedented in the state in the district starting at [illegible] on the Gila river, through Safford [illegible] the San Simon valley to the town of San Simon and to Bowie, and in the Sulphur Springs valley from Willcox to Douglas.

A survey of the area outlined by Mr. Penrod shows the following situation in development of oil prospects:

Four miles east of Bowie, Bowie oil well No. 1, on which operations were continued for several years by F. L. Copening but which has been closed down for the past few months, is being re-opened by the Gillispie Petroleum company of California in an endeavor to obtain production.

Other Wells Going Down

The Gillespie company likewise has contracted for immediate drilling of one and possibly two wells north of the Bowie district.

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The Pinal Oil Company of Superior has been drilling for the past six months 1,200 feet north of the Whitlock Company well, and is now down 1,100 feet and expects to reach oil sand soon.

Underwriters Syndicate No. 1 prospect near Pima, financed by eastern capitalists, now down 500 feet and work is continuing daily. This group is headed by William J. Vaughn of New York City, Carl A. Fuller of [illegible] Texas and others.

A second well in the Gila valley is being drilled near Ashurst. It is financed by W. W. Todd and W. A. Leet of New York, H. C. Wheeler of Boston, Richard Morrell of New Jersey and others. This prospect is down 300 feet and is working daily.

Still another company, organized recently, plans to begin drilling operations immediately. This organized by Phoenix men will be known as the Whitlock Extension Oil Company and is composed of T. F. Penrod, Ames Heller, Ralph H. Weaver, Dr. Charles Vivian and Normal Abell. Several of these are stockholders in the original Whitlock Oil Company. The new company will drill on land immediately adjacent to Whitlock No. 1, the discovery well.

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OIL WELL BROUGH

WHITLOCK WELL STRIKES OIL IN 1427 FOOT HOLE

OIL has been discovered in commercial quantities in the Whitlock Oil Company's prospect No. 1, 17 miles south of Bowie, it was announced last night by T. F. Penrod, president of the company, and confirmed in reports received by The Arizona Republican from other sources in the Bowie district. The discovery well was brought in November 9, but the fact has been closely guarded for the past three weeks while the organization acquired other available oil prospects in the district. Oil was struck at 1,127½ feet.

The Whitlock discovery is believed to be the first time oil in paying quantities has been discovered in Arizona, though several scores of geologists have maintained that there was oil in the state, and half a hundred or more "wildcatters" have been drilling in many parts of the state for a decade. Other "discoveries" have been reported at intervals, but none of them made the showing which has been encountered in the Whitlock well.

Hold Large Area

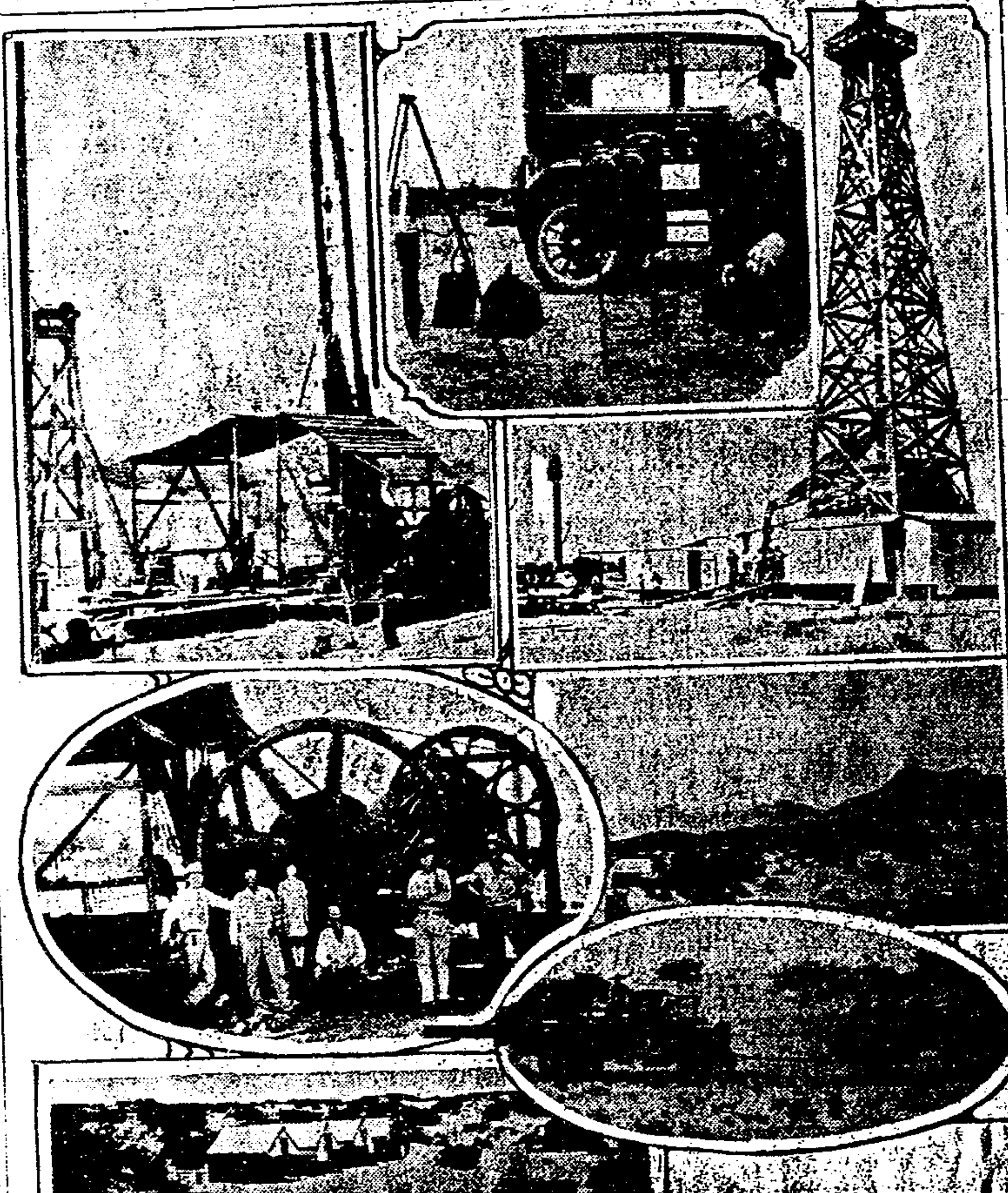
In the past three weeks the Whitlock organization has ecquired 70,000 acres of land in the district, and yesterday completed its purchase and gave first official confirmation of the discovery to The Arizona Republican.

The well, officially designated as being in Section 36, Township 10 South, Range 28 East, has been estimated as capable of producing 1,000 to 7,000 barrels of oil a day, by representatives of some of the largest oil companies in the country.. Mr. Penrod said yesterday that the well would be delivering at its capacity within three weeks.

Drilling on Whitlock prospect No. 1 was started July 3, after 28 geologists and three geophysicists had reported favorably on the location chosen in the San Simon valley. Start of drilling climaxed seven years of preparation and study undertaken by the Whitlock Company, and in which between $12,009 and $15,000 was spent.

At 1,209 feet, when caprock had not yet been encountered, an artesian well delivering 5,000 barrels of clear, pure water was brought in. Drilling was continued down until conglomorate was encountered.. Inasmuch as the drillers expect to encounter limestone as a caprock for oil sand, the conglomorate was drilled through without thought of encountering oil.

Where Black Gold Flows In Arizona



Views of the district north of Bowie, Arizona, where the Whitlock Oil Company on November 9 "brought in" what is believed to be Arizona's first oil well delivering the precious "black gold" in paying quantities. UPPER ROW, LEFT TO RIGHT—The rig and engine at Whitlock No. 1 which it is estimated will deliver 1,000 to 7,000 barrels of oil daily as soon as the casing has been cemented in; William Sharpe of the Colorado School of Mines, whose scientific instrument convinced the Whitlock Oil Company that petroleum could be found under its land; Trumbull No. 1, the first oil well being drilled in the Gila Valley at Cork Siding (Bear Springs) which is a contin-

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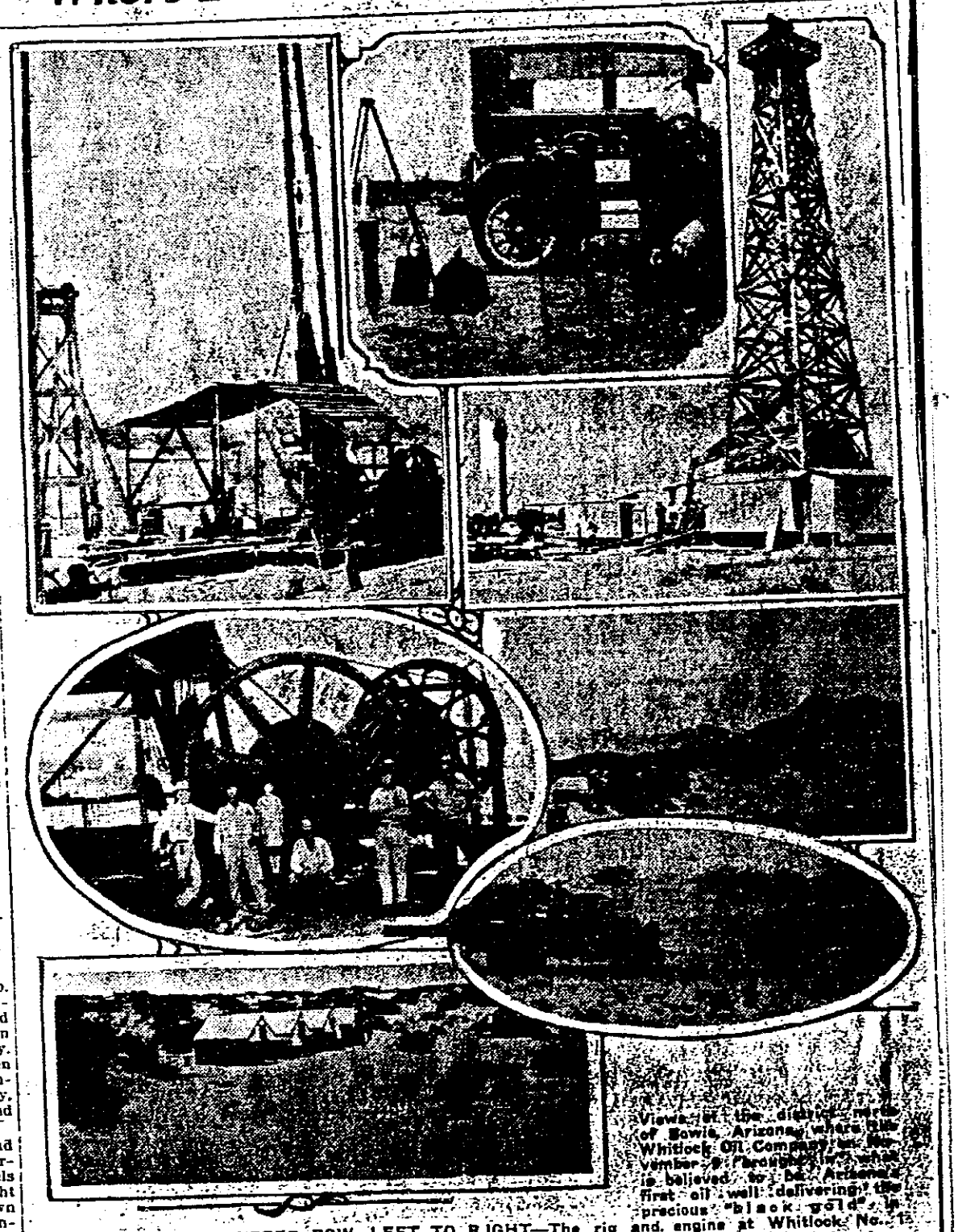

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Water Brings Oil

The drill suddenly struck a bed of oil sand, and the water rushing from the well suddenly brought a heavy proportion of oil.

Discovery of oil beneath conglomerate, which is gravel cemented into an impervious layer by lime, instead of beneath a limestone cap rock, which had not yet been encountered, found drillers unprepared. Immediate steps were necessary to prevent a continuous flow of oil and water, so the well was sealed at the conglomerate and a "rush order" sent for cement.

Let Cementing Contract

Mr. Penrod said last night a carload of special casing cement, guaranteed to seal off the water above the cap rock, was en route to Bowie from Los Angeles, having been shipped by the Southwestern Portland Cement Association. He also said the Whitlock Company had contracted, on the advice of the larger oil companies of the Pacific Coast, with the Perkins Oil Well Cementing Company to undertake the work of cementing off the well and bringing it into production.

Cementing off will be undertaken this week immediately on arrival of the cement, Mr. Penrod said, and allowing another week for the cement to set, the well will be producing three weeks from today, or December 24.

After the well was plugged back to the conglomerate, the company prospected with a core drill and proved, Mr. Penrod said, at least 22½ feet of oil sand and the bottom of the bed was not reached.

Oil has been flowing with the water over both slush pits at the well and through the ditches as far as three-quarters of a mile across the desert. A vast earthen dam has been constructed at some distance from the well, and as soon as the cementing off process is completed, oil will be permitted to flow out into this huge reservoir until tank or pipe line construction can be completed, Mr. Penrod said.

Oil flowing from the well has been analyzed as of high gravity with a paraffin base, differing radically from California oil but approaching in some respects the type of oil found in New Mexico, where there are now some 400 wells producing.

Financing Complete

Arrangements have been completed with Los Angeles banks, Mr. Penrod said, to finance the Whitlock Company until arrangements for delivery of the oil are completed.

Officers of the Whitlock Company which has brought in Arizona's first oil well are, in addition to Mr. Penrod, who is a resident of Phoenix, C. A. Button, vice-president and superintendent, formerly of Williams, now of Bowie; W. A. Peters, treasurer, Globe; LeRoy Kennedy, secretary, Miami; Bob Thomas, geologist, and Boyd V. Lind, geophysicist.

They freely predicted last night that Whitlock No. 1 had written the first line of a new chapter in Arizona's history.

Pointing out that there were seven or eight prospects being drilled in the district at the present time, Mr. Penrod last night declared he believed the "discovery" would start development unprecedented in the state, in the district starting at Fort Thomas on the Gila river, through Safford, up the San Simon valley to the town of San Simon and to Bowie, and in the Sulphur Springs valley from Willcox to Douglas.

Geologists affirm, Mr. Penrod said, that this district has much the same characteristics as the Bowie district, where Whitlock No. 1 is located. Drilling that well, he said, alternate layers of sand, shales and clay were discovered until the conglomerate capstone was reached

See New Industry

"This type of land is easy drilling for rotary rigs," he said, "and many of them are likely to appear here almost at once. Whitlock No. 1 was drilled with a cable too, which is much slower.

"I believe discovery of oil in this district has justified the faith of many men and is an event which heralds a new industry for the state—one long considered but little expected. I predict, and geologists join me in this, that petroleum production will soon rank second only to copper mining as a basic industry in Arizona.

"Many prospects are being drilled in our territory at the present time. And preparations are being made to start others. Discovery of oil in Arizona is the beginning of a new era rather than the climax of any efforts of the past."

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Geologists Report

Commenting on the fact that Whitlock No. 1 had been drilled only after 28 geologists had reported on the area, Mr. Penrod said:

"Concensus of opinion expressed in the reports of the geologists who have studied the oil possibilities of the Bowie and Bear Springs basins, characterized that section as rich in promise for the production of petroleum.

"With marked unanimity they declared that this field exhibits a happy union of those essentials of

(Continued on Page 2, Section 3)

Phoenix 4-8-27

Arizona May Assume Place As An Oil-Producing Area; Bowie Field Draws Interest

Arizona is destined to take its place among the oil producing states within a few months, and possibly weeks, if the opinion of oil experts and geologists who have been studying the fields of this section is correct.

At least nine drilling rigs are in operation at present, or will be in operation in the Bowie field this week and the northern Arizona areas have even more rigs now working and others are being fitted up for operation.

The Bowie field probably is the most attractive to oil prospectors at this time due to the interest manifested by representatives of two of the large oil companies.

T. F. Penrod, well known auto accessory salesman and president of the Whitlock Oil company, was in Phoenix yesterday and he spoke in enthusiastic terms of the oil possibilities at Bowie. "We have no stock on the market and our company is completely financed," Mr. Penrod said, "so I cannot be accused of trying to promote stock when I get enthusiastic in talking about Bowie."

The Whitlock company is made up of Arizona men. Mr. Penrod is president and Leroy Kennedy, manager of the Silver Belt at Miami is secretary of the company. The contract for drilling the company's first well was awarded last week and drilling apparatus is already on the ground.

M. C. Trumball and H. T. Proctor of the Trumbull Oil Detecting Instrument company spent considerable time making a survey of the field and following their examination of oil prospects arranged for a well for their company.

Utah Firm Represented

Frank Copening, head of the Bowie Leasing Syndicate, has been operating in this field for some time and recently he entered into a contract with the Utah Petroleum corporation, independent operators composed of Utah and San Francisco capitalists. The drilling superintendent of the Utah Petroleum corporation is on the ground supervising the placing of the drilling rigs at the new well and it is understood that plans have been perfected to reaume work on the original well southwest of Bowie.

William Crawford of the Final Oil company has drilled to more than 500 feet on a tract in the Bear Springs company's holdings 14 miles north of Bowie.

Active work on another lease near Ashurst on the Globe branch of the Southern Pacific will be started at once, according to announcement by W. J. Vaughn, New York city capitalist who is in Bowie.

The entire valley from Willcox north to Safford is humming with activity, Mr. Penrod says, and each day scores of automobiles pass through this district. Douglas reports state that oil men have been making their headquarters in that city for several weeks and it is expected that some important announcements will be made at the border city shortly.

Walter Gayhart, California geologist, spent some time in the Bowie field, and was favorably impressed with oil indications. R. E. Allen, also from California, and Adolph Gustafson of the Pan American Oil company; Professor Raenisky, Polish geologist, and a score of less prominent oil engineers have made a survey of the field during the last few months.

M. C. Trumball of the Trumball Instrument company made soundings in the district and reported higher indications than in any of the proven oil fields.

Triple Test Made

The Lind oil-detecting instrument also was used in this section, Mr. Penrod says, and tallied with the Trumball instrument. H. T. Proctor then took the instrument and made tests in the large producing field to determine how accurate the readings could be taken. After the tests he returned to Bowie and took up several leases for himself, Mr. Penrod says.

William A. Sharpe, who spent some time in the Globe district for one of the large copper companies, spent two weeks in the Bowie district. Mr. Sharpe perfected the radio detecting device for locating submarines during the World war and his instrument has been used extensively by mining companies for locating lost mineral bodies.

Sharpe's report on the Bowie district was even more optimistic than the Lind and Trumball reports, according to Penrod and he, too, is taking up some leases in the district.

A large group of Phoenix men is interested in the Bowie field and with nine drilling rigs in operation this month some definite reports should be made at an early date.

Rumors of oil floating on the surface water have been received for several years and as far back as 1912 reports from Willcox told of gas breaking through water wells and destroying drilling rigs.

The Southern Pacific water well at Willcox has been reported in oil for some time and engineers confend that the oil is not a result o leakage from stofage tanks in tha vicinity.

WILL SELL STOCK—The Whitlock Oil company has been granted a permit by the Corporation Commission authorizing it to issue and sell 150,000 shares of its capital stock at $1 a share. The permit supplements previous permits issued for stock sales and allows the company to put an additional 150,000 shares of stock on the market.

NEW COMPANY ENTERS OIL DISTRICT NORTH OF BOWIE IN ARIZONA

Whitlock Oil Co.

The Graham County Guardian, newspaper at Safford, Ariz., reports renewed activity in the oil district near Bowie, the Whitlock Oil Co., having a state land lease 14 miles north of Bowie and a drilling site chosen, where an extremely high reading was obtained recently with the Lind oil detecting instrument. The Whitlock company announce that $6,000 remains to be raised before actual drilling starts.

Timbers for a new derrick were hauled in the latter part of last week and actual construction was started by William Crawford, superintendent of drilling for the Pinal Oil company on a 2560-acre tract, 14 miles north of Bowie.

The drill had penetrated to a depth of 300 feet, according to reports in Safford Sunday last. At the latter depth a small oil showing was encountered. Other oil bands, sufficient to cause rainbow colors in the slush pond, have been encountered at 60 and 100 feet respectively.

The tract is being drilled by the Pinal Oil company of Superior, under a sub-drilling contract with the Bear Springs Oil and Gas company of Globe.

Riders of the Pony Express carried Lincoln's inaugural address 1,966 miles in 7 days and 17 hours.

It was a barber who started that saying about two heads being better than one.